DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

STATE AID FOR LOCAL TRANSPORTATION

Documentation Manual

Field Guide to Document Construction Pay Items on Local Government Agency Projects

SALT Construction Office

Reference to MnDOT Standard Specifications for Construction 2018 Edition

2018 Version

This document is intended to provide a reference and to act as guidance in the keeping of accurate construction contract records. This guidance is used to help identify the minimum requirements that are necessary to establish an adequate method of record keeping.

Note: These are examples of typical Documentation Requirements. Documentation requirements specified in the Special Provisions, Project Specifications, or the Plans shall govern over this Documentation Manual.

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

General Responsibility

Successful contract documentation requires that measurements and calculations supporting contract payments are accurate and that records of these actions are complete. Contract records and documentation must be sufficiently detailed and maintained in a manner that will withstand an audit and be clear enough to be read and understood by anyone unfamiliar with the project. The Engineer is responsible for ensuring that all quantity measurements are made and documented in accordance with the Specifications and instructions included in this Manual. The Special Provisions and Project Plans may address specific methods of measurement and payment requirements for certain pay items that supersede the Standard Specifications. Documents that require signatures, whether digital, electronic, or hand-written, are primarily a symbol signifying intent and identifying those who worked on the documentation record. It is acceptable to take action on correspondence sent by facsimile machines, scanned documents, and electronic mail. However, follow up mail or hard copies are required for all issues that require an original signature. It is important to be able to identify an original document and who created it in order to meet the requirements of the contract, an audit, or a court of law. The use of electronic records and signatures is voluntary.

Inspector's Responsibility

Inspectors employed by the Department will be authorized to inspect all work done and materials furnished. The Inspectors will not be authorized to alter or waive the provisions of the Contract, to issue instructions contrary to the Contract, or to act for the Contractor.

As a representative of the Engineer, the Inspector will report progress and acceptability of the work being performed, and will call to the attention of the Contractor any failures and infringements on the part of the Contractor. Should any dispute arise as to the materials or work performance, the Inspector may reject materials and suspend operations until the question at issue can be referred to and be decided by the Engineer.

The Inspector is charged with knowledge of the contract requirements, documenting quantities of materials in accordance with the Standard Specifications for Construction, this Documentation Manual and by the County/City Public Works Department. Proper documentation is vital to insuring that the Contractor is paid for all work satisfactorily completed and that the Department is paying only for such work. Accountability and accuracy for the funds distributed is crucial to proper construction documentation and is subject to public review in a Court of Law.

If it's not documented, it didn't happen…

Item Record Account - IRA

Throughout the following discussion reference to IRA shall also mean One Office or other DSAE approved methods. The IRA is the basis of recording and documenting all pay quantities. Pay quantities may be entered directly on the IRA or transferred from other records. Quantities may only be entered on the IRA when they are satisfactorily furnished and installed and become eligible for payment. The quantity entries, including supporting documentation, serve as both partial and final verification that correct payments are made on all vouchers. To verify the quantities entered in the IRA, the diary, field book, secondary documentation, or other original documentation source must be entered into the "Documentation Reference" column. There are two types of quantity entries made by the Inspector, Contract Bid Pay Items and Back Sheet Pay Items described as follows:

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Contract Bid Pay Items

All pay items in the Contract for which the Contractor submits a unit bid price, are referred to as "body" items and are entered and documented as they are satisfactorily furnished and placed and become eligible for payment. See Method of Measurement in this Manual for pay item documentation requirements and instructions.

Back Sheet Pay Items or "Other Allowable Payment Items"

Back sheet pay items are those contractual payments provided for by the Standard Specifications, Plans or Special Provisions, excluding Contract bid Items and Change Order pay items. The quantities for these items are then entered as they are satisfactorily furnished and installed and become eligible for payment. Examples:

- Credit taken for out of tolerance B624 Curb & Gutter as per Standard Specification 2531.3 I (1).
- Items for additional traffic control as per Special Provision S-1.3.
- Pavement smoothness incentive/disincentive per Table 2399-4.
- Bituminous density incentive/disincentive and volumetric deductions.

Distribution of Pay Quantities by Group/Funding Category

Group splits are required in order to account for separate costs such as Federal funds, State Aid funds, local costs that will be borne by other agencies, and other unique situations. An IRA should be made for each group in which a pay item is included. The Engineer is responsible for appropriate pay group distribution of all contract and back sheet pay items.

Documentation Types

Source Documentation

For certain items, "Source Documentation" of simply "Source" will be the only entry necessary in the Documentation Reference column in the IRA. By definition, the term "Source Documentation" means that the data submitted on the front of the IRA is the only documentation required for the particular pay item. It also means that no intermediate steps have been taken in the documentation process – that the entries have been transferred, for example, from other notes, tabulations, or scraps of paper.

- Front of the IRA. Plan Quantity pay items automatically qualify for "Source Documentation". Other pay items, which do not require extensive computations or specific forms for the documentation process, may be documented directly on the IRA. In these cases, all of the required documentation will appear on the front of the IRA and the Documentation Reference column will show "Source Documentation".
- Back of the handwritten IRA. The back of the IRA may also be used for sketches, measurements and computations. When this data fulfills all the documentation requirements for the item in question, the Documentation Reference column notation should be expanded to read "Source Documentation – see back", or some similar reference to the back of the IRA. Note that the use of the Source Documentation procedure is intended to simplify the documentation process. It accomplishes this end by replacing individual books, packets, folders, etc., with one single IRA.

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Supporting Documentation

The term Supporting Documentation is defined as any physical record that was created to serve as verification of either a partial or final pay quantity of a pay item. For daily update entries, the nature of these records must be entered on the IRA in either the "Document Location / Verification" field or the "Remarks" field. (Example: Concrete Measurement Book). For final documentation, this same Concrete Measurement Book that was used as support for each daily entry, will be completed and more specifically referenced in the "final Document Location" field as BOOK B-1 PAGES 1-8 CONCRETE WALK. Supporting Documentation includes, but is not limited to, various books, booklets, envelopes, forms, packets, quantity tabulations, data collection forms, and other field measurements/computations.

No erasures or overwriting is permitted in any documentation. If an error is made it will be corrected by neatly crossing out the erroneous data with a single line and entering the correct data in the most logical place.

Field Notes

Field notes are one of the many items that might be considered as a Support Document. It is recommended that all field notes, base line notes, centerline notes, and grade books be recorded in bound books. If loose-leaf books are to be used, care must be exercised to prevent lost pages. Notes should be recorded in a manner that is neat, clear, un-crowded, and in sufficient detail to be easily understood.

Original entries later determined to be in error must not be obliterated by erasing, application of correction fluid, taped over, or in the case of computer-generated documents, deleted. Instead, a line should be cleanly drawn through the mistaken entry and corrections entered directly above with the initials of the person making the change. This is very important, as erasures, or deletions will destroy the legal standing of notes. When revisions require abandonment of a considerable portion of notes, they shall be crossed out and a cross reference made of the book and page number where the revised notes may be found. Each Final Records book should be labeled. Each book is to be numbered and a table of contents included on the first page. It is essential that original field notes and documents be carefully organized, kept, recorded, and maintained in safe filing facilities during the active stage of a project. At all times, when not in use, all support documents, reports, survey notes, etc., should be kept in fire resistant files where possible.

Requirements for Notes

The following notations should be carefully observed for correct procedure:

1. Each set of notes must contain the date when they were made and the initials of the persons making them.
2. Each set of notes, should contain the date when the phases of work are accomplished, the initials of the persons who compute and check the quantities noted, the dates when the quantities were computed, the dates when the computations were subsequently checked, the locations where the work was performed, and the corresponding group number (if more than one group on project).
3. When field notes are used as the basic support document in supporting a payment to the Contractor, they must include the date and initials of the person making the entry into the computer application and the person verifying the entry.
4. Each pay quantity identified in the field notes should be designated with the corresponding item number and correct item name listed in the contract.
5. It is recommended that the correct field book or loose leaf sheet always be used for the particular kind of work being staked or measured.
6. The degree of accuracy required for computing unit quantities should be consistent with standards established in this Manual.

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7. It is recommended that sets of field notes and field books be numbered and titled in order to prevent their loss and to aid in tracking payments and their supporting information. Information and documentation loses its value if it cannot be retrieved.
8. Notes should be kept so that work can be checked without returning to the field. Use positive controls. If notes are properly kept, any person familiar with the project should be able to verify accuracy of the work from information contained in notes.

Secondary Documentation (Supplemental or Original)

When it is found impractical or impossible to comply with the explicit instructions for documentation, as set forth in this Documentation Manual, Secondary Documentation can be used. Secondary Documentation is essentially a three-step process whereby the Engineer: Recognizes the problem of documenting an item in the manner prescribed by the Documentation Manual. Remedies the situation by using a logical, secondary method to accomplish the documentation, hence the term, Secondary Documentation, and relates the circumstances necessitating the use of Secondary Documentation.

Note that an explanation must be included for each item when Secondary Documentation is involved. The explanation may be on the IRA, or may be attached or affixed to the Secondary Documentation that is referenced on the IRA. The common denominator for all instances of Secondary Documentation is the EXPLANATION by the Engineer.

One area where Secondary Documentation may be used to good advantage is in the area of small quantities. Similarly, quantity controls can be achieved thru the use of Secondary Documentation by citing the impracticality of following the specific Documentation Manual requirements when small quantities are encountered, and explaining the steps taken and logic used in documenting the pay item in some other fashion than that normally required.

In some cases, it may not be recognized that Secondary Documentation applies (or has been used) until the field personnel commence processing the final records. In this event, an explanation of what transpired may satisfy the requirements of Secondary Documentation.

Invoice Documentation (Non-Force Account)

Most quantities must be measured for payment. Occasionally, it may be necessary to use an invoice as quantity documentation. When shipments are received on the project and the Contractors invoice will serve as documentation of a Contract pay item, the Inspector shall make certain that the material furnished is indicative of the quantities shown on the invoice. The Inspector shall initial the invoices to verify the quantity of material on the invoice agrees with the material used and identify the project numbers (SP/SAP) on each invoice.

Standard Plate Items

Quantities for pay items placed in accordance with a MnDOT Standard Plate, which has predetermined quantities or formula for such quantities, will be accepted in lieu of measurements or computations, provided a statement on the IRA (or other supporting documentation) confirms that the item was placed in accordance with the provisions of said Standard Plate.
Example*: Class III Riprap placed in accordance with Standard Plate No. 3133*

Special Pay Items

Special pay items, not specifically covered by the Standard Specifications, shall be measured and documented in accordance with the method of measurement and basis of payment outlined in the Contract Special Provisions. If a special pay item is not addressed in the Contract Special Provisions, measurement and payment shall be made in accordance with a similar or "like" pay item in the Standard Specifications. Special pay items are typically listed in the Contract Special Provisions using a .600 suffix after the 4-digit item number.

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Example: Item 2506.603 - L.P. Catch Basin Design Special.

Pay Items Eliminated, Not Used

Pay items eliminated by the Engineer or not used, should show a final pay quantity of "0" (Zero) on the IRA, and an explanation of why the item was not used should be noted in the Remarks field of the IRA. Examples: *Item not used; Item eliminated by Engineer, or similar statement*.

Rounding Procedures

- The objective of the rounding procedures is to create a fair payment for any pay item. Consistent math rounding procedures should be used in all intermediate measurements leading up to the final pay quantity for an item.
- Pay items will be paid to the closest whole unit (Cu.Yd, Lin.Ft, etc.) as shown in the UNIT column, unless designated as a fraction of a unit in the UNIT column.
- Pay items shown as fractional quantities in the ESTIMATED QUANTITY column should be rounded-off and paid as fractional quantities.
- Exceeding the accuracy of the requirements shown in the UNIT column will be acceptable for all pay items.
- No pay item used may be rounded to a “0” (Zero) final pay quantity.

Rounding Exception

When a pay item has a substantial UNIT PRICE, paying to the closest whole unit can at times cause undue overpayment or underpayment to the Contractor. In this case, the Engineer may at his /her discretion invoke a rounding exception.

Example: Structural Concrete @ $300.00 per Cubic Yard. The Engineer may want to pay to the closest 0.1 of a Cubic Yard rather than to the closest 1.0 Cubic Yard.

This rounding exception can be used on all pay items except those items that are to be measured as Each, Lump Sum, or (P) Plan Quantity. No special notation on the IRA will be required when this rounding exception is used.

MEASUREMENT OF QUANTITIES

Unless otherwise specified, the Engineer will measure in accordance with this section.
The Engineer will determine quantities of acceptable Work using one of the following methods:

- Plan dimensions for Contract Items or portions of Contract Items designated as (P) in the Statement of Estimated Quantities on the Plans, the Department will use the Plan quantities for payment;
- Field measurement for Contract Items with no (P) designation shown on the Plans, the Engineer will field measure quantities of Work performed; or
- A combination of Plan dimensions and field measurements.

The Engineer may adjust quantities for portions of the Work or the entire Project. The Engineer will not adjust quantities if a difference results from use of commonly accepted dimensional approximations.

The Engineer will determine quantities using the US customary system of weights and measures. The units and the methods of measurement in the Contract for each class of work will supplement or modify the provisions in this section by the following:

- Imposing measurement limitations;
- Describing measurements or computation procedures;
- Establishing conversion factors or adjustment conditions; and
- Providing for the determination of accurate and representative pay quantities.

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Item names for pay quantities may include designated terms to indicate the basis for unit measurements, such as where or when the Engineer will take the unit measurements or make computations. Unless otherwise required by the Contract, the Engineer will make measurements and computations as specified in this section.

The Contractor may dispute the Engineer's determination of pay quantities by submitting a written request to the Engineer. The Contractor shall state the Contract Item and sections of the Project disputed and provide details to justify the Engineer's review of the pay quantity. The request must be consistent with conditions governing the Contract Item. The Engineer will not review quantities unless the Contractor provides evidence substantiating that the quantity is incorrect.

Plan Quantity Documentation (P)

"Source Documentation" will automatically be the reference for Plan Quantity items. The IRA alone will be sufficient documentation when plan quantities are involved. The "Plan Quantity Statement" in the Remarks column of the IRA will indicate that

- **1)** the Plan Quantity has been verified and
- **2)** the method to verify placement is in accordance with the plan.

All Plan Quantity items will be accompanied by this statement:
"The finished product is in close conformity with the specified dimensions as verified by the _____method."
The blank space will be used to indicate the kind of check that was performed to assure that the Plan Quantity was attained. Examples: form check, field measurement, physical count, length – width – depth check, etc. In any case, the Engineer's project records must be able to substantiate the validity of the Plan Quantity Statement.

IMPORTANT: The Plan Quantity Statement applies **ONLY** to Plan Quantity Items. **DO NOT USE** on any other units of measure.

Unless changes have been made to the original contract quantity shown on the IRA, that same contract quantity will equal the Final Pay Quantity on the IRA at the conclusion of the project. If changes or corrections have been made, the only way to retain the true Plan Quantity classification would be via a Change Order setting forth the new or revised Plan Quantity.

Computed Only Change (New (P) Plan Quantity)

If the contract proposal quantity of a (P) item is changed based on computation only, (either in part or as a whole), the single "Plan Quantity Statement" and "Source Documentation" will then apply to the New (P) Quantity arrived at by adding (or subtracting) the computed changed portion of the final pay quantity to the original contract proposal quantity. These computations should remain in the engineer's files.

Actual Field Measured Change [(P) Plan Quantity Plus]

Any actual field measured additions or subtractions to the (P) Plan Quantity must include all "Supporting Documentation" with the final records. On the IRA, any **actual field measured** change must be documented separately from the **computed only** changes portion of the final pay quantity. It is recommended to document changes to (P) Plan Quantity via Change Order. This is especially true when dealing with (P) items that have a large quantity.

Example: Item 2105.501 Common Excavation 785,000 CU YD (P).

It is not unusual for an item such as Common Excavation to undergo both computed and actual field measured changes several times throughout the life of a Contract. In these cases, the Change Order is a good tool to document each change, step by step.

In all cases, the following information is required to document any change to a (P) Plan Quantity:

- Reason for change.
- Location

- Specific increase / decrease quantity.
- Method of measurement – computed only or actual field measured.

If the Department places a (P) designation on individual Contract Items or specific portions of Contract Items in the Statement of Estimated Quantities on the Plans, the Department will use the Plan dimensions to calculate the pay quantity for that Contract Item. The Department will limit use of the (P) designated quantities to Contract Items with specified dimensions and controlled by field checks during, or after construction.

The purpose of the Department's use of (P) designated quantities is to avoid the expense of measuring dimensions, if original Plan dimensions remain valid. The Engineer will determine the quantities of Contract Items that do not have a (P) designation, using the methods of measurement required by the Contract, unless otherwise agreed in writing. The Engineer will use Plan dimensions as applicable for completed Work. The Engineer will only use field dimensions if required by the Contract or as necessary to accurately dimension completed Work.

The Engineer will adjust a (P) designated quantity if the Engineer revises the dimensions of the Work or decides the (P) designated quantity is incorrect. The Engineer will only adjust quantities for the revised or corrected portions of the (P) designated Contract Item.

AREAS

For longitudinal measurements, the Engineer will measure horizontally for computing an area and will not make deductions for structures with an area no greater than 1 sq. yd. For transverse measurements, the Engineer will use the neat line dimensions shown in the Plans or ordered by the Engineer.

STRUCTURES

The Engineer will measure Structures using the neat line dimensions shown on the Plans, or the dimensions as altered to fit field conditions.

LENGTH

The Engineer will measure Contract Items requiring a linear unit of measure, such as pipe culverts, guardrail, and underdrains, parallel to the base or foundation on which the Structure is placed.

VOLUME

A Excavated Volume (EV) — Cubic Yard

The Engineer will determine the cubic yards of Excavated Volume (EV) using the cross-section method or digital surface model method to measure the material in its original position.

B Compacted Volume (CV) — Cubic Yard

The Engineer will determine the cubic yards of Compacted Volume (CV) using the cross-section method or digital surface model method to measure the compacted material in its final position, in accordance with the placement dimensions required by the Contract or directed by the Engineer.

C Loose Volume in Vehicular Measure — Cubic Yard

The Engineer will determine the cubic yards of Loose Volume (LV) using the vehicular measure method.
The Contractor shall haul material in Engineer-approved vehicles as specified by 1513, —Restrictions on Movement and Storage of Heavy Loads and Equipment. The Engineer will measure the material at the point of delivery to the nearest 0.13 cu yd .The Contractor may use vehicles for hauling material to the Project of any size or type approved by the Engineer if the Engineer can easily determine the vehicle body capacity and view the

contents. The Engineer will determine the struck capacity for each vehicle. The Contractor shall mark the struck or level perimeter line on the inside of the box of each vehicle. The Contractor shall load the vehicle and level the load as directed by the Engineer. The Contractor shall provide over-allowance for settlement of the load during transit. The Engineer may direct the Contractor to level any load upon its arrival at the point of delivery. The Engineer will not measure material heaped above the struck capacity of the vehicle. The Engineer will make deductions in 0.65 cu. yd. increments on loads that contain less than the struck capacity. The Contractor shall provide hauling vehicles with a conspicuous, legible identification mark that is acceptable to the Engineer.

D Stockpiled Volume (SV) — Cubic Yard

The Engineer will determine the cubic yards of Stockpiled Volume (SV) using the cross section method or the digital surface model method to measure material in the stockpiled position. The Contractor shall shape the stockpile to a condition directed by the Engineer before measurement.

Uniform Loads

For Quantity Verification, the Engineer will prepare a short memorandum addressed to the project file that explains the specific steps taken in both the establishment and the verification of loads where methods are not readily evident by the documentation. Documentation of Uniform Loads shall be accomplished on Weigh Tickets or Quantity Tally Sheets and the daily spot checks.

Spot Check Weight - Spot checks will be as determined by the Engineer, and will be performed as follows: A loaded truck selected by the Engineer shall be stopped and directed to a commercial scale were the actual weight of material is determined to ensure that this actual load is equal to or exceeds the established uniform load weight. The commercial scale tickets showing tare, gross and net weight checks shall be recorded and retained in the project file.

Spot Check Volume - Spot checks will be as determined by the Engineer, and will be performed as follows: The contractor shall level the load upon its arrival at the point of delivery if so directed by the Engineer. No allowance will be made for material heaped above the struck capacity of the vehicle. The actual volume of material will be determined to ensure that this actual load is equal to or exceeds the established uniform load volume. The results of these spot checks may be recorded directly on the Quantity Tally Sheets, or by separate record. All spot check records shall be retained in the project file.

Loader Scale Spot Check Weight – Spot checks will be as determined by the Engineer, and will be performed as follows: A loaded truck selected by the Engineer shall be stopped and directed to a certified commercial scale were the actual weight of material is determined to ensure that this actual load is **within 1%** the established certified weight. The commercial scale tickets showing tare, gross and net weight checks shall be recorded and retained in the project file.

Vehicular Measure: see spec. 1901.5

- The hauling capacity of trucks, trailers and semi-trailers shall be documented. The Computation of Truck Box Capacities form or other DSAE approved method may be used.
- The hauling capacity of scrapers shall be documented by listing the make and model number and manufacturers rated struck capacity. The Quantity Tally Sheets form or other DSAE approved method may be used.
- If sideboards are added, measure and compute the added capacity and add it to the manufacturer's rated struck capacity. The Computation of Truck Box Capacities form or other DSAE approved method may be used.
- Heaped capacity is restricted to elevating scrapers only.

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MASS

For measuring or proportioning Material by mass, the Contractor shall provide certified weights or weigh Material on calibrated, approved scales. The Department will not allow the use of front-end loader scales. The Contractor shall give the Engineer a copy of the inspection certificate. The Contractor shall provide an automated weighing device for Materials hauled in trucks and paid for by mass.

A Certified Weights

If the Contractor includes a Department-approved delivery ticket form, certified by the weigh master, or if the Contractor delivers the Material in original containers marked with the certified weight, the Contractor may provide certified weights as an alternative to weighing the Material in the presence of the Engineer. The Contractor shall not unseal Material delivered in sealed containers until the Engineer approves. If the Engineer suspects a loss of Material, the Engineer will require the Contractor to reweigh the Material.

B (Blank)

C Scale Testing and Calibration

The Contractor shall ensure an authorized person tests and calibrates scales before use on the Project. The Contractor shall provide test weights, accessories, and assistance required for testing and calibrating the scales. The Contractor shall test and calibrate the scales in accordance with the frequency, criteria, tolerances, and sensitivity requirements in this section.

C.1 Authorized Person

An authorized person, as defined by one of the following descriptions, shall test and calibrate the scales:

(1) A scale service person with a valid placing-in-service registration issued by the Minnesota Department of Commerce, or

(2) The Contractor, with approval of the Engineer and under the supervision of the Engineer.

C.2 Frequency

The Contractor shall test and calibrate the scales in accordance with the following:

(1) Inspect, test, and calibrate the scales each year before use on the Project,

(2) Spot check scales for accuracy and sensitivity at the discretion of the Engineer as Work progresses,

(3) Check the vehicle tare and gross mass at a frequency directed by the Engineer for Materials weighed in the hauling vehicle,

(4) Test and calibrate scales at three-month intervals for the duration of the Project, unless otherwise approved by the Engineer, and

(5) Test and calibrate scales as specified by these Standard Specifications.

C.3 Testing and Calibration Criteria

The authorized person shall test and calibrate the scales with calibrated test weights. The Contractor shall provide calibrated test weights certified by the Minnesota Department of Commerce within the preceding 12 months, unless otherwise allowed by the Engineer. The authorized person may weigh the supplemental mass of Material or Equipment on the scales after initial calibration and use to supplement the calibrated test weights. The Contractor shall verify commercial scales have current approval from the Minnesota Department of Commerce before the Engineer will allow use on the Project.

C.3.a Testing and Calibration by Registered Scale Service Person

If a registered scale service person performs testing and calibrating, the service person shall test scales up to the maximum expected load weighed on the Project. The Contractor shall provide evidence to the Engineer that scales meet the Contract requirements.

C.3.a (1) Truck Scales

The registered scale service person shall use at least 22,050 lb. of calibrated test weights along with the supplemental mass.

C.3.a (2) Batch Scales

The registered scale service person shall use at least 1,100 lb. of calibrated test weights along with the supplemental mass.

C.3.b. Testing and Calibration by the Contractor

If the Contractor tests and calibrates the scales, the Contractor shall perform a comparison test. The Contractor shall perform the comparison test at the minimum and maximum expected loads weighed during the Project.

C.3.b (1) Truck Scales

The Contractor shall weigh an empty truck and a loaded truck of the size and capacity the Contractor will use on the Project on an approved commercial scale, then, weigh the same empty truck and loaded truck on the scale the Contractor will use on the Project.

C.3.b (2) Batch Scales

The Contractor shall make calibrated test weights available at each scale installation, at all times to provide a total test mass of 30 percent of the net load the Contractor will weigh not exceeding 1,100 lb. of test weights. The Engineer may allow the Contractor to weigh a load, or series of loads, in a hopper then drop the load into a truck that has been weighed on an approved commercial scale. The Contractor shall weigh the loaded truck on the same approved scale.

C.4 Scale Tolerance

C.4.a Calibration with Calibrated Test Weights

The Contractor shall use scales with scale indications within 1 percent of the value of the calibrated and supplemental test weights applied to the scale.

C.4.b Calibration with an Approved Commercial Scale

Indicated loads on the calibrated scale shall agree within 1 percent with the indicated loads on the approved commercial scale.

C.5 Scale Sensitivity

C.5.a Weigh beam Indicators

The scale indicator, at the normal minimum and maximum loads, shall sense a change in load equal to 0.2 percent of the load on the scale.

C.5.b Dial or Digital Indicators

A sensitivity test is not applicable, but the dial or digital indicator shall respond uniformly and smoothly to changes in loads on the scale.

D Automated Weighing Device

If the Department pays for Materials, hauled in trucks, by mass, the Contractor shall provide scales integrated with a ticket printer. Tickets shall include the date, Project number, Contract Item number, truck or tractor and trailer identification, truck tare, and net mass. The truck driver shall give the ticket to the Inspector on the Project.

BITUMINOUS MATERIALS

The Engineer will measure bituminous Materials by the gallon or ton and make corrections for loss, waste, foaming, and quantities not incorporated in the Work. The Engineer will make volumetric measurements of bituminous Materials at 60 °F or will correct the amount based on a volume at 60 °F, using the Bituminous Manual.

The Engineer will determine the volumetric content of transport and storage tanks using the tank manufacturer‘s calibrated measuring devices and outage tables, based on the computed or certified tank capacity, or the Engineer will compute the content from the density factors derived from tests.

OTHER BASIS OF MEASUREMENT

If the Contractor and Engineer mutually agree in writing, the Engineer may measure Materials in units other than the units of measure specified as the basis of payment. The Engineer will convert the measured quantities

to the unit of measure specified in the method of measurement section. The Engineer will establish the factors for conversion from one unit of measurement to another as mutually agreed.

TIMBER AND LUMBER

The Engineer will measure timber and lumber by at least one of the following:
(1) Each,
(2) Lump sum,
(3) Area in square feet, or
(4) Volume in cubic yards in the structure based on the nominal width, thickness, and the extreme length of each piece in the finished Structure.

LUMP SUM

If used as a unit of measure, the term —lump sum shall mean complete payment for the Contract Item as described in the Contract.

INDIVIDUAL UNIT OR EACH

If a complete Structure, Contract Item, or lump sum unit is specified as the unit of measure, the Engineer will measure the unit based on physical count and will include fittings and accessories.

RENTAL EQUIPMENT

The Engineer will measure rental Equipment based on time in hours of actual working time and traveling time of the Equipment within the Project.

STANDARDS AND TOLERANCES …….. 1503 & 1603

If the Contract specifies standard manufactured items, such as fencing, wire, plates, rolled shapes, pipe conduit, unit mass and section dimensions, the Engineer will consider the identification of these items as nominal.

SCOPE OF PAYMENT

The Contractor shall receive compensation provided for in the Contract as full payment for providing Materials and performing Work in accordance with the Contract requirements. This includes compensation for all risk, loss, damage, and expense incurred by the Contractor for performing the Work required by the Contract subject to 1720, “No Waiver of Legal Rights”.

COMPENSATION FOR ALTERED QUANTITIES

If the Department pays for the Work of a Contract Item on an actual quantity basis and the accepted quantities of Work vary from the quantities in the Contract but do not meet the requirements established for significant changes in 1402.3, “Significant Changes to the Character of Work”, the Department will pay for the work of the Contract Item as follows:
(1) The Department‘s payment based on the Contract Unit Prices is payment in full for the quantities of work performed by the Contractor and accepted by the Engineer.
(2) The Department will not pay for increased expenses, loss of expected reimbursement, or loss of anticipated profits or overhead suffered or claimed by the Contractor due to differences between the actual quantities of Work and the quantities in the Contract.
(3) The Department will not pay for loss of expected reimbursements from unbalanced allocation of costs among the Contract Items due to differences between the actual quantities of Work and the quantities in the Contract.

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

COMPENSATION FOR CONTRACT REVISIONS

If the Department revises the Contract as provided in 1402, "Contract Revisions", the Department will compensate the Contractor for the Contract revision following the sequence specified in 1904.2 through 1904.4. Such compensation for the Contract revision constitutes final and full compensation for performing the revised Work, delay costs, and all other costs not expressly precluded by 1904.5, "Non-Allowable Charges". The Engineer will determine the pricing method following the sequence specified in 1904.2 through 1904.4 before directing the Contractor to perform the Work in the Contract revision. If the Contract revision includes a time extension for compensable delays as provided by 1806, "Determination and Extension of Contract Time", the Department will compensate the Contractor for the costs associated with the time extension in accordance with 1904.6, "Compensation for Delay".

CONTRACT UNIT PRICES

Before proceeding to another pricing method, the Engineer will attempt to price and pay for the Contract revision using Contract Unit Prices.

NEGOTIATED PRICES

If the Engineer and Contractor are unable to agree on compensation in accordance with 1904.2, "Contract Unit Prices", they will attempt to negotiate unit or lump sum prices using one or more of the following methods:
(1) Original Contract Unit Prices for similar Contract Items adjusted for increased or decreased Material costs;
(2) State-wide average unit prices awarded for the Contract Item(s) as listed in the Department's annual "Summary of Contracts Awarded";
(3) The average of unit prices awarded on three different projects of similar work and quantity;
(4) Unit prices computed by the Office of Estimating; or
(5) Cost analysis of labor, material, equipment, and mark ups as allowed in 1904.4, "Force Account". The Department will not compensate by a negotiated price for Contract Revision work performed by a subcontractor that includes a Contractor mark-up that exceeds that provided for in 1904.4.H, "Contractor Mark-Up". Within 5 business days of the Department's request, the Contractor shall submit a written proposal that includes pricing, cost justification, and a schedule for the Contract revision. The Department will respond within 5 business days after receipt of the Contractor's submittal. The Department and the Contractor can mutually agree to extend these 5-business-day time limits.

FORCE ACCOUNT

Documentation of Force Account work includes: **Not to be confused** with the State Aid **Force Account Agreement** of which is submitted by a City/County to State Aid when work is being done by City or County local forces, a railroad, or utility company. The work must be performed in accordance with Specification 1904 "Extra and Force Account Work".

Summary of Daily Force Account

Daily Equipment & Labor Rental Record

If the Engineer and Contractor are unable to negotiate a price for the Contract revision in accordance with 1904.3, "Negotiated Prices", the Engineer may direct the Contractor to perform all or part of the revised Work on a force account basis. When the Engineer directs the Contractor to perform revised Work on a force account basis, the Department will pay the Contractor as specified in 1904.4.A through 1904.4.J.

A Labor

The Department will compensate the Contractor for labor at the actual rate of wage paid and shown on the payroll for every hour that the labor and foreman are actually engaged in the revised Work. The foreman must be in direct charge of the specific operations and must be at the Project Site in order to be included in this compensation. Unless already included in the wage rates paid, the Contractor will also receive the actual labor-related costs incurred by reason of subsistence and travel allowances, health and welfare benefits, pension fund,

or other fringe benefits, provided those payments are required by collective bargaining agreement or other employment contract generally applicable to the classes of labor employed on the Work. The Department will prorate the wages of any foreman who is employed partly on the revised Work and partly on other Work. The Department will determine the prorated wage based on the number of workers employed on each class of Work as shown by the payrolls. The Department will prorate any subsistence or travel allowances paid to the foreman on the same basis as the prorated direct wages.

The Department will pay the Contractor an amount equal to 62 percent of the actual taxable rate of wage as full compensation for overhead, profit, additional bond, property damage and liability insurance premiums, workers' compensation insurance premiums, unemployment insurance contributions, employer Social Security taxes, and other indirect labor force costs. This compensation is based on a Workers' Compensation insurance premium of $21.00 per $100.00 of payroll. If the revised Work involves labor in a classification with a higher premium rate, the Contractor may submit a written request in accordance with 1403, “Notification for Contract Revisions”, for the additional premium amount. The request shall include:
(1) A certified copy of the Contractor's latest Workers' Compensation Final Insurance Audit, and
(2) A certification from the insurance carrier, listing the Workers' Compensation classification code numbers and the premium rates that are being paid in the current year.

B Materials

The Department will pay the Contractor the actual cost of acceptable Materials delivered and used in the revised Work, including transportation charges paid by the Contractor (exclusive of equipment rentals), plus an additional 15 percent for field and home office overhead costs and profit.

C Equipment

The Department will pay the Contractor for Equipment at the rental rates established by the Commissioner‘s Equipment Rental Schedule available on the Department‘s website and effective on the date the two parties execute the force account agreement. This compensation is for Equipment, fuel, and lubricants that the Engineer authorizes and the Contractor uses on the Project. The Department will not pay for small tools. The Department will pay for the actual time the Equipment is in operation on the revised Work, plus travel time or transportation allowances. The Department will not pay for any additional Equipment costs except as provided under 1904.4.D, “Miscellaneous Compensation”. If the Equipment is moved to and from the location of the revised Work under its own power, the Department will pay for the travel time at the above rental rates. If the Equipment is moved to and from the location of the revised Work by means other than its own power, the Department will pay for the actual operating time during periods of loading and unloading at the above rental rates and will pay for the actual transportation costs.

D Miscellaneous Compensation

If the Engineer directs the Contractor to perform the revised Work on the right of way of a railroad, in addition to the compensation for labor, Materials, and Equipment, the Department will pay the Contractor for actual costs related to satisfying the requirements of 1708, “Railroad-Highway Provisions”. The Department will only pay for these costs to the extent that there is no duplication or overlapping of charges provided under 1904.4.A, “Labor”, 1904.4.B, “Materials”, and 1904.4.C, “Equipment”, or by any existing contract items. The Department will pay the Contractor for the actual cost of miscellaneous fees plus five percent incurred in performing the revised Work, including but not limited to dump fees, permits, and licenses. The Department will not pay the Contractor for other miscellaneous costs that the Contract does not provide for specifically.

E Daily Records

The Engineer and Contractor will document the labor, Materials, and Equipment used in performing the revised Work on a Daily Force Account Record (Form 2137). At the end of each workday, the Engineer and Contractor will compare and sign the Daily Force Account Record. Daily Force Account Records signed by both the Department and Contractor will govern over other Department and Contractor records. In the event the Contractor declines to sign the Daily Force Account Record, the Department‘s records shall govern.

Note: These are examples of typical Documentation Requirements. Documentation requirements specified in the Special Provisions, Project Specifications, or the Plans shall govern over this Documentation Manual.

F. Payments

The Department will not pay for the revised Work until the Engineer has accepted the revised Work and the Contractor has submitted to the Engineer itemized statements of the cost, including the following:

(1) Name, classification, date, daily hours, total hours, rate, and extension for each laborer and foreman.

(2) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of Equipment.

(3) Quantities of acceptable Materials, prices, and extensions.

(4) Transportation costs of Materials and Equipment.

(5) Invoices for Materials used and for transportation charges. If the Contractor uses Materials on the revised Work that the Contractor did not specifically purchase for the Work but were taken from the Contractor's stock, the Contractor shall submit an affidavit certifying that such Materials were taken from the Contractor's stock, that the quantity was actually used, and that the price and transportation costs represent the actual costs to the Contractor.

G Specialty Contract Work

If the Contractor uses specialty contracting firms to perform the revised Work, the Department will pay the Contractor by reasonable invoice at the discretion of the Engineer. “Specialty work” is unique work that cannot be performed by the Contractor, its subcontractors, or other contracting firms that generally perform work on highway construction projects.

The provisions of 1904.4.A through 1904.4.F shall not apply to payments made by reasonable invoice. All firms or contractors paid under these provisions and working on the Project are subject to all Labor Provisions required by the Contract.

The Contractor shall provide the Engineer with a cost estimate of the specialty Work or service and obtain the Engineer‘s approval before performing the specialty Work or service. As a minimum, the cost estimate shall include a complete description of types of Equipment to be used, the number and job classifications of employees who will perform the specialty Work, and all Material costs.

H Contractor Mark-Up

For any force account work performed by a subcontractor (including work performed by a specialty contractor), the Department will pay the Contractor one additional mark-up on revised Work performed by a subcontractor to cover administration, general superintendence, overhead, profit, and expenses not otherwise recoverable. The additional mark-up will be a percentage of the total force account invoice for the subcontractor‘s portion of the revised Work equal to 10 percent of the first $50,000.00 plus 2 percent of the balance in excess of $50,000.00.

I Acceleration

The Engineer may order the Contractor to accelerate the Work to avoid delay costs or to complete the Project early. The Department will pay for accelerations in accordance with this section (1904).

J Inefficiency

The Department will compensate the Contractor for inefficiency or loss of productivity resulting from 1402, “Contract Revisions”. Use the Measured Mile analysis, or other reliable methods, comparing the productivity of work impacted by a change to the productivity of similar work performed under unimpacted (unchanged) conditions to quantify the inefficiency. The Department will pay for inefficiencies in accordance with this section (1904).

NON-ALLOWABLE CHARGES

The Department will not pay the Contractor for the following, regardless of the method of payment for the revised Work:

(1) Loss of anticipated profits;

(2) Consequential damages, including loss of bonding capacity, loss of bidding opportunities, and insolvency;

(3) Indirect costs;

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(4) Attorney's fees, claims preparation expenses, or costs of litigation.

Per 1402.4, "Suspensions of Work Ordered by the Engineer", the Department will not pay the Contractor for profit on suspensions or delays ordered by the Engineer. The Department will remove profit from the mark-ups in 1904.4.A, "Labor", 1904.4.B, "Materials", and 1904.4.H, "Contractor Mark-Up", by reducing the mark-up percentages as follows:

(1) Labor: from 62 percent to 57 percent;

(2) Materials: from 15 percent to 10 percent; and

(3) Contractor mark-up: from 10 percent for the first $50,000.00 to 5 percent for the first $50,000.00.

COMPENSATION FOR DELAY, see Specification 1904.6

COMPENSATION FOR ELIMINATED ITEMS

The Department will compensate the Contractor for eliminated items in accordance with the following:

(1) For completed quantities of eliminated Contract Items, the Department will compensate the Contractor for the accepted quantities at the Contract Unit Price.

(2) For materials that the Contractor has ordered but not incorporated in the Work, the Department will compensate the Contractor in accordance with 1907, "Payment for Surplus Material".

(3) For partially completed quantities of eliminated Contract Items, the Department will compensate the Contractor for that portion of the quantity of the work the Contractor has performed on the eliminated Contract Item on the basis of a percentage of the Contract Unit Price equal to the percentage of work performed toward completion of that quantity of the Contract Item. To calculate this percentage, the Engineer will consider the value of materials incorporated in the partially completed quantity of the eliminated Contract Items to be the invoice cost of the materials plus transportation costs. The Engineer will add a 15 percent mark-up to the sum of the invoice and transportation costs.

(4) For the cost of equipment, mobilization, and overhead that the Engineer considers directly attributable to the eliminated Contract Items and that the Department has not compensated the Contractor for through provisions (1), (2), and (3) of this list, the Department will compensate the Contractor in accordance with 1904, "Compensation for Contract Revisions".

The Department will not compensate the Contractor for loss of anticipated profits on completely or partially eliminated Work. The Department's compensation to the Contractor for completed or partially completed quantities of Work on eliminated Contract Items in accordance with 1905 constitutes final and full compensation for the Work the Contractor has performed on eliminated or partially eliminated Contract Items. The Contractor shall allow the Department access, in accordance with 1721, "Audits", to the Contractor's cost records and other data relating to the Contract as needed by the Department to determine compensation for eliminated Work.

PARTIAL PAYMENTS

At least once a month at regular intervals, the Engineer will prepare an estimate of the value of the Work completed to date. Each estimate will show the documented quantity of Work completed or substantially completed under each Contract Item. The Department will make partial payments once per month based on the amount of Work performed, unless the Engineer authorizes semi-monthly partial payments. The Department reserves the right to withhold partial payments under this Contract if the Contractor fails to provide documents as required by any other contract with the Department that prevent the Department from making the Final Estimate or executing the Certificate of Final Acceptance for the other contract. The Department reserves the right to deduct, from any payment due to the Contractor, such amount to protect the Department's interests in consideration of charges or assessments against the Contractor, whether arising from this Contract or any other contract with the Department. The Department may withhold payment of such amount until the Contractor pays or satisfies the charges or assessments. The Department's payment of partial estimates does not relieve

the Contractor from the sole responsibility for all Materials and Work for which payments have been made or for the restoration of any damaged Work. The payments are not a waiver by the Department of any provision of the Contract or of the Department's rights to require the Contractor to fulfill all terms of the Contract. The Contractor's acceptance of partial payment constitutes a certification by the Contractor that the Work covered by the partial payment meets the Contract requirements.

MATERIAL ON HAND

The Contractor may request partial payments for the value of "materials on hand", defined as acceptable Materials produced for or provided to the Project, but not yet incorporated into the Work.

The Department will pay for Materials on hand when the Contractor meets the following requirements:

(1) Requests payment for at least $5,000;

(2) Provides Materials specifically manufactured, produced, or supplied for permanent incorporation into the Project;

(3) When the Contractor provided storage as approved by the Engineer for Materials delivered to, or adjacent to, the Project Site;

(4) When the Contractor irrevocably assigns the Materials to the Project, stores the Materials separately from other similar Materials, ensures the Materials are not available for use on other projects, and makes the Materials available for inspection by the Department at the material storage location for Materials not yet delivered to, or adjacent to, the Project Site; and

(5) Provides Materials as shown on the Plans and in accordance with the Specifications.

The Department will not make partial payments for living plant or perishable materials as Materials on hand.

The Contractor shall provide the following actual, authentic, customary, and auditable documents, produced in the normal course of business, to receive payment for Materials on hand:

(1) Invoices and proof of payment for the Materials,

(2) An itemized list detailing the cost of Contractor-produced Material, and

(3) Documents containing complete Material description and identification.

The Department will pay for Materials on hand in an amount not greater than the delivered cost of the Material as verified by Contractor-provided invoices or not greater than the Contract Unit Price for the Material complete in place. The Department reserves the right to recover payments made by the Department for Materials on hand if the Department believes the Contractor has not paid its Subcontractors or suppliers for the Materials on hand. The Department may recover the applicable payment by deducting such amount from the next partial payment.

PAYMENT FOR SURPLUS MATERIAL

The Department will pay for Materials ordered for the Work, but not used, if the Engineer cancels a portion of the Work or the Contract, orders the termination of the Work before completion of the entire unit, or orders a quantity greater than the quantity needed for the Work, in accordance with the following:

(1) If the Contract Item only includes providing and delivering the Material, the Department will pay for purchased surplus Materials shipped or delivered to the Project at the Contract Unit Price;

(2) If the Contract Unit Price includes the cost of providing and placing of the Material, the Department will perform the following:

(2.1) Take possession of the purchased surplus Material shipped or delivered to the Project, and pay the actual purchase price and transportation cost plus 15 percent, or

(2.2) Order the Material returned to the supplier for credit and pay the Contractor the actual purchase price and transportation costs plus 15 percent of the total, less credits the Contractor received for the returned Materials.

(3) The Department will pay the actual purchase price and transportation cost plus 15 percent, upon delivery, for Materials that required special manufacture, fabrication, or processing, making the Materials unsuitable for

general use, only if the supplier refuses to cancel or modify the order for Materials. The foregoing items (1) to (3) will not apply and the Department will not pay for Materials ordered for the Work, but not used, if the Contractor or supplier takes possession of the surplus Material at no additional cost to the Department. The Department will pay an amount for surplus Materials not greater than the Contract Unit Price for the same quantity of Materials complete in place. The Contractor shall provide receipted invoices or an affidavit showing the purchase price and transportation charges for surplus Materials that will become the property of the Department. The Contractor shall deliver surplus Materials that the Department purchases to the storage sites designated by the Engineer. The Department will only pay for Materials incorporated in the Work, except as otherwise specified in this section. The Department will only pay for surplus materials inspected, tested, or approved for use and for material properly preserved, stored, and maintained in accordance with 1606, "Storage of Materials", and 1607, "Handling Materials", until delivered to the Department.

COST ESCALATION

The Department will not make adjustments for cost escalation, unless the Contract requires otherwise.

Changes in the Method of Measurement of a Contract Pay Item

Any change from the method of measurement specified in the specifications or special provisions shall be clearly documented either by Change Order **or** by entering an explanation of the change on the applicable IRA. The unit of measure, for payment purposes, must remain the same as the original contract item, and may require a **conversion factor** to accomplish. Any conversion factor(s) that will be used must be included either by Change Order, on the supporting documentation, **or** with the explanation in the "Remarks" field of the IRA.

For Example:
Item Gravel Base Class 5 is designated by the Contract to be paid for by the ton. The method of measurement is changed to Cubic Yard (LV). In this case, the Cubic Yard total obtained by field measure must be converted back to tons for payment by using a conversion factor similar to 1 Cubic Yard (LV) = 1.43 tons. ***Other conversion factors****: 1 ton = 0.7 cubic yard (LV – loose volume), 1 ton = 0.55 cubic yard (CV – compacted volume), 1 cubic yard CV = 1.82 tons, 1 Cubic Yards. (LV) = 1.43 tons.*

If a Change Order <u>is not</u> used, the following (or similar) statement would be necessary either on the supporting documentation Haul Sheets or directly on the IRA in the "Remarks" field.

"*The method of measurement for Contract Item No. 2211.501 Gravel Base Class 5 is changed from ton scale weight to Cubic Yards (LV). Cubic Yard totals will be converted back to tons for payment by using a conversion factor of 1.0 Cubic Yard (LV) = 1.4 tons.*"

If a Change Order <u>is</u> used to accomplish a change in the method of measurement, it would be written to include all of the above requirements. The "Remarks" field of the IRA would simply state "See Change Order # _____".

In all cases, whenever a change in the method of measurement occurs, the new method of measurement will dictate the "Supporting Documentation" that must be properly referenced on the IRA or other documentation method.

CONTRACT REVISIONS

Contract revisions are governed by MnDOT 1402. The Engineer reserves the right to make, ***in writing***, at any time during the progress of the work, such changes in quantities and such alterations in the work as are necessary to satisfactorily complete the project or for reasons of the Department's interest. Revisions to the Contract will not add Work beyond the limitations imposed by law or beyond the termini of the proposed construction except as may be necessary to satisfactorily complete the Project. Revisions to the Contract neither

invalidate the Contract nor release the surety, and the Contractor agrees to perform the Work as revised. Either party to the Contract may assert that a Contract revision has occurred.

If the Engineer concludes that a Contract revision is necessary, the Department will compensate the Contractor for the revision in accordance with 1904, 1905, and 1907. No allowance, except as specifically provided by the payment provisions of the Contract, will be made for any increased expenses, loss of expected reimbursement, or loss of anticipated profits suffered or asserted by the Contractor, whether resulting directly from revisions in the Work or indirectly from unbalanced allocation of expenses among the Contract Items, for any variation between the quantities in the Bid Schedule and the actual quantities ordered and performed, or from any other cause. If necessary, a time extension may be granted in accordance with 1806.

The Change Order contract change form should be used for all contract revisions. See the Contract Changes section of the State Aid Manual for a detailed explanation of contract changes.

FINAL DOCUMENTATION

Final Process for State Aid Construction Projects**:**

- Submit Final Change of Contract Construction Status form to DSAE.
- DSAE conducts final inspection using the Final Inspection Report.
- Prepare and submit Final State Aid Payment Request form to DSAE/SAF.

Final Process for Federal Aid Construction Projects, see DCP Checklist Part 4: Completion.

- **L**ocal **P**ublic **A**gency (LPA) notifies District State Aid Engineer – DSAE of project completion by submitting Change in Contract Construction Status. DSAE conducts final inspection, use Final Inspection Report form.
- Contractor submits DBE Total Payment Affidavit to Civil Rights Office (Spec 1908) with a copy to LPA. Civil Rights Office reviews/approves payment affidavit & notifies the LPA & SALT that final payment can be made.
- LPA submits copy of Materials Certification Exceptions Summary to District Materials Engineer for review/approval of the Independent Assurance requirements. The completed Materials Exception Summary is then forwarded onto the DSAE. See Construction section of the Electronic State Aid Manual (ESAM) for certification of materials.
- LPA contacts Labor Compliance Unit regarding labor holds.
- LPA prepares Final Estimate and is certified by the Project Engineer. Must be in engineer's estimate format (in Excel, at least 12 pt. font), showing the breakdown of federal participating & non-participating for each category/group. The Final Estimate is documented and adjusted for liquidated damages, surplus materials and incentives/disincentives.
- LPA makes final payment to the Contractor. NOTE: If finaling process & payment to Contractor is anticipated to exceed 90 days, process a DCP Partial Payment Request. See the DCP Payment Request Guide for detailed instructions on preparation of the DCP Final Payment Request.
- LPA submits DCP Final Payment Request for Federal Aid share & bridge bonding funds (if any) to DSAE. The DCP Final Payment Request **must** be prepared on the State Aid Finance website, printed out, signed, and submitted with the following required documents to the DSAE:
- Final Contract Voucher including a copy of the Final Estimate (adjusted as stated above). See Final Contract Voucher Sample.

Note: These are examples of typical Documentation Requirements. Documentation requirements specified in the Special Provisions, Project Specifications, or the Plans shall govern over this Documentation Manual.

DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

- Contractors Certificate of Final Contract Acceptance. The total on your acceptance certificate must match the total work certified on the Final DCP Payment Request.
- **Cost Breakdown Similar to Bid Estimate for any project with multiple groups or categories**: The cost breakdown submitted with the final should be split the same as the bid estimate attached to the Participation Distribution that SALT sends out when the project is let.
    - **1)**. Lump Sum items on the final should be certified at the same percentage as the original bid estimate attached to the Participation Distribution. When you receive the Participation Distribution you should check those percentages and if they do not agree with what you have notify SALT Finance at the beginning of the project, otherwise we will expect it to be certified according to the original bid estimate. (Mobilization, Traffic Control, Erosion Control Supervisor, etc.)
    - **2)**. All items will be checked against the original bid estimate, so if you certify something in the "**different group**" and there is no documentation supporting it, it will be kicked back for an explanation or FHWA would prefer a Change Order with the explanation. All extra work documents should be included in the groups they belong in on this cost breakdown.
- **Back Sheet items**: Any Lump Sum Back Sheet Items require calculation documents. Examples – Density Incentives, Ride Incentives – if your quantity is "Lump Sum" you need to send the calculation documents.
- Materials Certification Exceptions Summary. If you have deductions referenced or shown on this document, you should have a change order or back sheet item that clearly shows how this deduction was taken including the calculation. If you do not and it is a part of the bid line item, than you should send a copy of the IRA (Individual Record Account) showing how the deduction was applied.
- Overrun Justification. An overrun for a Federal Encumbrance Increase should have the original qty/price and final qty/price and the difference to show how you arrived at your overrun amount. If you have a multiple category project, you must also include the group break down, over and under by group.
- **Change Orders**, if applicable. Group number should be on each document and if it is split between multiple groups, you need to show the total by group.
- If requesting State Aid funds for matching and/or other costs, include State Aid Payment Request.
- All the pages of the payment details report should be sent with the payment request to the DSAE in Districts 2, 6 & 7.
- While it is no longer required to submit the Certificate of Performance form to State Aid, note that *MN Statute 160.17 Subd.3* requires that the work be certified to the county board or the town board, & the certificate filed in the office of the county auditor or town clerk.
- DSAE reviews/approves/submits DCP Final Payment Request package, including signed copy of Final Inspection Report & any missing Change Orders to SALT.
- DSAE reviews/approves/submits State Aid Payment Request to **S**tate **A**id **F**inance (SAF). (Include Bid Abstract if this is the first State Aid Payment Request.)
- SALT reviews/approves/forwards DCP Final Payment Request to SAF.
- SAF reimburses the LPA for the final Federal aid & bridge bonding share.
- SAF releases funds in accordance with State Aid Rules.
- Any additional documentation that may be required for other funding sources (i.e. State Aid funds, Safe Routes to Schools, etc.)

See the DCP Final Payment Request Sample Packet for additional help in preparing the final submittal packet.

Retention Schedule

LPA must retain records for 10 years from date of final Federal action. Project is not finaled if the "Final Payment Date" column is empty on the **Open Construction Projects** form, found under **State Aid County and Municipality Reports** in SAAS Web Reporting.

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

Audits may be conducted by FHWA or Mn/DOT Office of Audit.

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
	All Plan Quantity Items, whether they are provided for in the Plans, Special Provisions, or Change Orders.	Any	**Plan Quantity** – Plan quantities must be verified in the field to determine if the original plan quantities are still valid. Verification may include length-width-depth checks, stake checks, form checks, spot check measurements. Where changes in quantities are authorized or errors are detected, a Change Order must be written, and the manner in which it is written will dictate which records must be retained with the Final.	If recorded in the IRA, record as Source Documentation. Otherwise, record verifications in diary or field book and record with proper reference in the IRA.
2021	Mobilization	LUMP SUM	Lump Sum – Review 2021.5 Basis of Payment	Record on IRA as a decimal for the Partial Estimate.
2031	Field Office Field Laboratory	EACH	Unit – Payment based on number of satisfactory accepted units.	Record on IRA. Measure and compute the in place area.
2051	Maintenance & Restoration of Haul Roads	LUMP SUM	Lump Sum – One hundred percent of this item paid upon satisfactory restoration as verified by the Local Road Authority.	Record the date on the IRA that the Haul Road restoration has been satisfactorily completed.
2101	Clearing and Grubbing	ACRE	Area Computation – Measure and compute the horizontal area bounded by the line of trunks of trees cleared, or stumps grubbed. Compute each area to the closest 0.05 Acre.	Record locations of topographic notes on the IRA.
	Clearing and Grubbing	LUMP SUM	Lump Sum – Pay the percent completed in each Partial Estimate. Pay 100% of each item on the satisfactory completion of all clearing and grubbing	Record on IRA as a decimal for Partial Estimate.
	Clearing and Grubbing	TREE	Unit – Count for payment all trees more than 4” in diameter at a point 2 feet above ground, or at cutoff point for stumps.	Record tree count for each item, in each area as part of the notes.
2102	Pavement Marking Removal	SQ FT	Sq. Ft - Measure and compute the in place area.	Record on IRA.
2102	Pavement Marking Removal	LIN FT	Linear Feet – Measure length	Record on IRA.
2103	Building Removal	LUMP SUM	Lump Sum – All buildings removed on the project will comprise Lump Sum.	Record on IRA.
	Disconnect Sewer Service	EACH	Unit – Physical count.	Record location of each disconnect with proper reference on IRA.
	Disconnect Water Service	EACH		

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SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
2103	Basement Excavation Fill	CU YD	Volumetric Measure (By Computation) –Measure length, width and depth, and compute volume.	Record three dimensional sketches, measurements and computations with proper reference on IRA.
2104	Salvage / Remove * Sawing Bit./Concrete	LIN FT	Linear Feet – Length measurements will be made along the longitudinal center line of the structure, parallel to the base or foundation upon which the structure is placed and from end to end of the structure as removed. Pipe measurements will be made from center to center of junction fittings,	Record location and length of each removal and/or salvage with proper reference on IRA.
	Remove *	SQ FT Sq. Yd.	SQ FT SQ. YD. – Measure and compute the in place area. Removal includes base and cushion courses if applicable. Also includes the removal of integrant curb, if applicable.	Record location, dimensions and computations with proper reference on IRA.
	Remove *	CU YD	Volumetric Measure (By Computation) –Measure length, width and depth, and compute volume.	Record three dimensional sketches, measurements and computations with proper reference on IRA.
	Remove * Salvage * Abandon * 	EACH	Unit – Physical count.	Record location of each removal and/or salvage with proper reference on IRA.
	***** Specify Item Name, such as: culvert pipe, sewer pipe, drain pipe, curb and gutter, curb, sidewalk, fence, concrete or masonry structures, railway track, manholes or catch basins, integrant curb, concrete pavement, bituminous pavement, pavement, trench pavement, guard rail, water well, etc.			
2105	Common Exc. Unclassified Exc. Subgrade Exc. Muck Exc. Rock Exc. Channel Exc. Pond Exc. Rock Channel Exc.	CU YD	Cross Section Measure or DTM (Re-measurement) – Volume will be computed by the average-end-area method, using the latest available x-section as the original x-sections. The **DTM Method** may be used to determine volumes.	Record proper calculated volumes and file references on IRA.
	Common Borrow (EV) Granular Borrow (EV) Select Granular Borrow (EV)	CU YD	Cross-Sectional Measure (EV – Excavated Volume)-Compute volume, using the average-end area method, or DTM method of the material in its original position at the source of supply.	

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
2105	Common Borrow (LV) Granular Borrow (LV) Select Granular Borrow (LV)	CU YD	Vehicular Measure – Measure & Compute Truck Box Capacities to closest O.1 C.Y. Round the total for each area to the closest C.Y. per day.	Record the load-count of material used on Quantity Tally Sheets with proper reference on IRA.
2106	Common Borrow (CV) Granular Borrow (CV) Select Granular Borrow (CV)	CU YD	Cross-Section Measure (CV – Compacted Volume) – Compacted Volume will be computed by the average-end-area method, using the latest available x-section as the original x-sections. The **DTM Method** may be used to determine volumes, or designated by the Engineer.	Record proper calculated volumes and file references on IRA.
2106	Stabilizing Aggregate CV	CU YD	Cross-Section Measure – Compute the volume, using the average-end area method, of the material. The **DTM Method** may be used to determine volumes.	Record proper calculated volumes and file references on IRA.
2106	Stabilizing Aggregate	TON	Weight (Scale) – Weigh on approved scales. Round total for each area to closest ton per day. For the uniform load method, Weigh Tickets are not required.	Record the uniform load-count of material used on Quantity Tally Sheets with proper reference on IRA. Record non-uniform loads on weight ticket
2111	Test Rolling	RDST	Road Station - Measure length in road stations of 100 feet along the centerline of the roadbed. Measure ramps and loops to the ends of entrance and exit noses. If the Engineer orders testing on any portion of the roadbed to an extent less than the full width specified, the measurement will be in proportion to the width tested.	Record the length and location of the Roadbed tested. Record with proper reference on the I.R.A
2112	Subgrade Preparation			
2118	Aggregate Surfacing Class ___	TON	Weight (Scale) – Weigh on approved scales. Round total for each area to closest ton per day. For the uniform load method, Weigh Tickets are not required.	Record the uniform load-count of material used on Quantity Tally Sheets with proper reference on IRA. Record non-uniform loads on weight ticket
	Aggregate Surfacing (LV) Class ___	CU YD	Vehicular Measure – Measure & Compute Truck Box Capacities to closest O.1 C.Y. Round the total for each area to the closest C.Y. per day.	Record the load-count of material used on Quantity Tally Sheets with proper reference on IRA.

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
2123	Common Laborers Motor Grader ___C.Y. Dragline ___C.Y. Shovel ___C.Y. Scraper Dozer ___C.Y. Truck ___ HP Tractor Rotary Tiller Disc Harrow ___C.Y. Front End Loader Pneumatic Tired Roller Tamping Roller ___Ton Steel-Wheeled Roller	HOUR	Miscellaneous – Measure the hours of actual working time and necessary traveling time within the Project limits. Round the time for each item to the closest half-hour per day.	Record equipment and labor hours with proper reference on IRA. **Or on Force Account Worksheet**
2130	Water	M GALLON	Volumetric Measure (Liquid) – Load-count method. Measure and compute tank capacities to the closest 100 gallons and count the number of loads used. Meter method. Use calibrated meter, show beginning and ending reading. When a municipal meter is used, a certificate from the municipal officer is acceptable.	Record with proper reference on IRA.
2131	Calcium Chloride Solution	GALLON	Volumetric Measure (Liquid) – Measure each distributor load by Sticking, by Weight or by Calibrated Meter. Convert to gallons at 60° F. using the Mn/DOT Bituminous Manual correction factors for Asphalt Emulsion. Convert quantity of 35% solution to equivalent quantity of 38% solution by multiplying by 0.921.	Record with proper reference on IRA.
	Calcium Chloride Solution	TON	Weight (Scale) – Weigh on approved scales. Round total for each area to closest ton per day.	Record with proper reference on IRA.
2211	Aggregate Base	TON	Weight (Scale) – Weigh on approved scales. Round total for each area to closest ton per day. For the uniform load method, Weigh Tickets are not required.	Record the uniform load-count of material used on Quantity Tally Sheets with proper reference on IRA. Record non-uniform loads on weight ticket

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
	Aggregate Base (LV)	CU YD	Vehicular Measure – Measure & Compute Truck Box Capacities to closest O.1 C.Y. Round the total for each area to the closest C.Y. per day.	Record the load-count of material used on Quantity Tally Sheets with proper reference on IRA.
	Aggregate Base (CV)		See Plan Quantity (Method of Measurement) at the top of page 9.	See Plan Quantity (Documentation) at the top of page 9.
	Stockpile Aggregate Class___	TON	Weight (Scale) – Weigh on approved scales. Round total for each area to closest ton per day. For the uniform load method, Weigh Tickets are not required.	Record the uniform load-count of material used on Quantity Tally Sheets with proper reference on IRA. Record non-uniform loads on weight ticket
2211	Stockpile Aggregate (LV) Class ___	CU YD	Vehicular Measure – Measure & Compute Truck Box Capacities to closest O.1 C.Y. Round the total for each area to the closest C.Y. per day.	Record the load-count of material used on Quantity Tally Sheets with proper reference on IRA.
2211	Stockpile Aggregate (S.V.) Class ___		Cross-Section Measure – Compute the volume, using the average-end area method, of the material. The **DTM Method** may be used to determine volumes.	Record proper calculated volumes and file references on IRA.
2212	Drainable Aggregate Base (DSB or OGAB)(CV)	CU YD	See Plan Quantity (Method of Measurement) at the top of page 9.	See Plan Quantity (Documentation) at the top of page 9.
2215	Full Depth Reclamation or Stabilized FDR	SQ.YD.	Area Computations – Measurements and computations will be of those areas reclaimed as specified, based on actual finished dimensions of the work.	Record measurements and computations with proper reference on IRA.
2215	Haul Full Depth Reclamation (LV)	CU YD	Vehicular Measure – Measure & Compute Truck Box Capacities to closest O.1 C.Y. Round the total for each area to the closest C.Y. per day.	Record the load-count of material used on Quantity Tally Sheets with proper reference on IRA.
2221	Aggregate Shouldering	TON	Weight (Scale) – Weigh on approved scales. Round total for each area to closest ton per day. For the uniform load method, Weigh Tickets are not required.	Record the uniform load-count of material used on Quantity Tally Sheets with proper reference on IRA. Record non-uniform loads on weight ticket
	Aggregate Shouldering (LV)	CU YD	Vehicular Measure – Measure & Compute Truck Box Capacities to closest O.1 C.Y. Round the total for each area to the closest C.Y. per day.	Record the uniform load-count of material used on Quantity Tally Sheets with proper reference on IRA.

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
	Aggregate Shouldering (CV)	CU YD	See Plan Quantity (Method of Measurement) at the top of page 9.	See Plan Quantity (Documentation) at the top of page 9.
2231	Bituminous Patching Mixture	TON	Weight (Scale) – Weigh on approved scales. Round total for each area to closest ton per day.	Record the uniform load-count of material used on Quantity Tally Sheets with proper reference on IRA. Record non-uniform loads on weight ticket
	Bituminous Patching Mixture	CU YD	Vehicular Measure – Measure & Compute Truck Box Capacities to closest O.1 C.Y. Round the total for each area to the closest C.Y. per day.	Record the uniform load-count of material used on Quantity Tally Sheets with proper reference on IRA.
	Mixture for Joints and Cracks	LB	Weight (Scale) - Weigh on approved scales. Round each load to closest 10 pounds. Round total for each area to closest Lb. per day. For uniform load method, Tickets are not required.	Record measurements and computations with proper reference on IRA.
	Joint and Crack Filler			
2232	Mill Bituminous Surface	SQ. YD.	Area Computations – Measurements and computations will be of those areas milled as specified, based on actual finished dimensions of the work.	Record weights and computations with proper reference on IRA.
	Mill Concrete Pavement Surface			
2301	Concrete Pavement & High Early Pavement	SQ. YD.	Area Computations – Measure and compute the area of the pavement as constructed.	Record measurements and computations with proper reference on IRA.
	Structural Concrete & High Early Structural	CU YD	Volumetric Measure (By Computation) –Measure length, width and depth, and compute volume.	
	Concrete Pavement __in High Early	SQ. YD.	Area Computations – Measure and compute the area of the pavement as constructed.	Record measurements and computations with proper reference on IRA.
2301	Place Concrete Pavement __in	SQ.YD.	Area Computations – Measure and compute the area of the pavement as constructed.	Record measurements and computations with proper reference on IRA.
	Supplemental Pavement Reinforcement	LB	Weight (By Computation) – Compute the weight of reinforcement bars, prior to coating with epoxy, based on the lengths shown in the Plans. See Table 2472-3 in MnDOT 2472.4.	Record weights and computations with proper reference on IRA.
	Dowelled Expansion Joints Design ___	LIN FT	Linear Feet – Measure length of work actually performed. When measuring dowel bar assemblies use the linear foot of pavement joint in which the devices are installed.	Record measurements and computations with proper reference on IRA.
	Integrant Curb Design ___			

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
2301	Dowel Bars	EACH	Unit – Physical count.	Record measurements and computations with proper reference on IRA.
2331	Bit Material for Mixture	Ton	Weight (Scale) – Non-uniform loads weigh on approved scales. Round each load to the closest 0.1 ton. Automatic printout tickets may be substituted, do not round individual tickets.	Record non-uniform loads with proper reference on IRA.
2353	Ultrathin Bonded Wearing Course	SQ YD	Area Computations – Measure and compute the area of the pavement as constructed.	Record measurements and computations with proper reference on IRA.
2354	Bit. Material for Micro Surfacing	GALLON	Volumetric Measure – Measure each distributor load by sticking, by weight or by calibrated meter. Convert to gallons at 60°F. (Do not include additional water mixed with asphalt emulsions.)	Record gallons with proper reference on IRA.
	Micro Surfacing Rut Fill	TON	Weight (Scale) – Non-uniform loads weigh on approved scales. Round each load to the closest 0.1 ton. Automatic printout tickets may be substituted, do not round individual tickets.	Record non-uniform loads with proper reference on IRA.
	Micro Surfacing Scratch Course			
	Micro Surfacing Surface Course			
2355	Bit. Material for Fog Seal	GALLON	Volumetric Measure – Measure each distributor load by sticking, by weight or by calibrated meter. Convert to gallons at 60°F. (Do not include additional water mixed with asphalt emulsions.)	Record gallons with proper reference on IRA.
2356	Bit. Material for Seal Coat			
	Bituminous Seal Coat	SQ YD	Area Computations – Measure and compute the area of the pavement as constructed.	Record measurements and computations with proper reference on IRA.
2357	Bituminous Material for Tack Coat	GALLON	Volumetric Measure – Measure each distributor load by sticking, by weight or by calibrated meter. Convert to gallons at 60°F. (Do not include additional water mixed with asphalt emulsions.)	Record gallons with proper reference on IRA.
2358	Bituminous Material for Prime Coat			
2360	Type___ Wearing Course Mixture	TON	Weight (Scale) – Non-uniform loads weigh on approved scales. Round each load to the closest 0.1 ton. Automatic printout tickets may be substituted, do not round individual tickets.	Record non-uniform loads with proper reference on IRA.
	Type___ Non wearing Course Mixture			
	Bit Mix for Specified Purpose			

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
	Bit Mix for Production			
2360	Type___ Course Mix, (Designation) thick	SQ YD INCH	Area Computations – Measure and compute the area of the pavement as constructed. Check thickness	Record measurements and computations with proper reference on IRA.
	Type___ Course Mix, (Designation)	SQ YD		
2363	Bit Mixture for PASSRC	TON	Weight (Scale) – Non-uniform loads weigh on approved scales. Round each load to the closest 0.1 ton. Automatic printout tickets may be substituted, do not round individual tickets.	Record non-uniform loads with proper reference on IRA.
	Bit Mixture for PASB	TON		
	Bit Material for Mixture	TON		
2365	Type SM (designation) Wearing Course	TON		
2401	Structural Concrete	CU YD	See Plan Quantity (Method of Measurement) at beginning of page 9.	See Plan Quantity (Documentation) at beginning of page 9.
	Structure Excavation			
	Structure Concrete	SQ FT		
	Bridge Slab Concrete			
	Sidewalk Concrete			
	Raised Median Concrete			
	Type ___ Barrier Concrete	LIN FT		
	Median Barrier Concrete			
	Reinforcement Bars Delivered	LB	Weight (By Computation) – Compute the weight of rebar based on the lengths shown in the Plans. The quantity measured will include only	
	Reinforcement Bars Placed			

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
	Reinforcement Bars Steel Fabric Spiral Reinforcement		those splices which are shown in the Plans. Use the table shown in Specifications 2472.4A. Do not include bar supports or tie wires. For Steel Fabric, compute the weight per foot shown in the Plans times the area as staked. Spiral Reinforcement is based on the weights shown in the Mn/DOT Bridge Inspection Manual.	Record computations with proper reference on IRA.
2402	Sheet Metal (Spec No.)	LB	Weight (By Computation) – Compute the weight of rebar based on the lengths shown in the Plans. The quantity measured will include only those splices which are shown in the Plans. Use the table shown in Specifications 2472.4A. Do not include bar supports or tie wires. For Steel Fabric, compute the weight per foot shown in the Plans times the area as staked. Spiral Reinforcement is based on the weights shown in the Mn/DOT Bridge Inspection Manual.	Record computations with proper reference on IRA.
	Structural Steel (Spec No.)	LB		
	Furnishing Structural Steel (Spec No.)	LB		
	Erecting Structural Metal	LB		
	Rigid Steel Conduit	LB		
	Metal Pipe (Spec No.)	LB		
	Floor Drain, Type___	EACH	Unit – Physical count.	
2402	Ornamental Metal Railing	LIN FT	See Plan Quantity (Method of Measurement) at beginning of page 9.	See Plan Quantity (Documentation) at beginning of page 9.
	Structural Tube Railing Design___			
	Plate Railing			
	Pipe Railing			
	Expansion Joint Devices Type __			
	Elastomeric Bearing Pad Type _	EACH	Unit – Physical count.	Record on IRA as Source Documentation.
	Elastomeric Bearing Assembly Type __			
	Bearing Assembly			

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
2403	Untreated Timber	Mbm	Miscellaneous - Measurements and computations based on nominal sizes and lengths incorporated in the structure.	Record computations with proper reference on the I.R.A.
	Treated Timber			
	Hardware	LB	Weight (Mass) (By Computation) - Compute the hardware mass based on the unit of mass shown in the plans. (Do not include the mass of rails, dowels, or panel hardware in quantities for payment.)	Record computations with proper reference on the I.R.A.
	Prefab Timber Panel, Type__	EACH	Unit - Physical count. (Panel hardware is included in this item).	Record on IRA as Source Documentation.
	Glue Laminated Deck Panel, Type__			
2404	Concrete Wearing Course	SQ FT	Area Computation – The Concrete Wearing Course will be measured by surface area, as computed from specific dimensions. No deduction will be made for the surface area of expansion devices or other miscellaneous appurtenances.	Record measurements and computations with proper reference on IRA.
2405	Prestressed Concrete Beams	EACH	Unit – Physical count.	Record on IRA as Source Documentation.
	Prestressed Concrete Double Tee-Beams			
	Prestressed Concrete Beam	LIN FT	Linear Foot – Measured by summation of the individual lengths, out to out, along the centerlines of beams.	Record measurements on IRA as Source Documentation.
2405	Diaphragms for Prestressed Beams	LIN FT	Linear Foot – Measure horizontal distance of intermediate diaphragms from centerline to centerline of beam along axis of the diaphragms.	Record measurements on IRA as Source Documentation.
2406	Bridge Approach Panels	SQ YD	Area Computation – The bridge approach panel will be measured by surface area, as computed from specific dimensions.	Record measurements and computations with proper reference on IRA.
	Expansion Joints, Design E8H	LIN.FT.	Linear Foot – Measured by summation of the individual lengths, out to out, along the centerlines of the joints.	
2411	Structure Excavation	CU YD	See Plan Quantity (Method of Measurement) at beginning of page 9.	See Plan Quantity (Documentation) at beginning of page 9.
	Structural Concrete			

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
2411	Concrete (Type of Structure)	SQ. YD.	Area Computation – Measurements and computations will be based on actual surface dimensions as placed.	Record measurements and computations with proper reference on IRA.
	Reinforcement Bars	LB	Weight (By Computation) – Compute the weight of reinforcement bars based on the lengths shown in the Plans. The quantity measured will include only those splices which are shown in the Plans. Use table shown in Specifications 2472.4A. Do not include bar supports or tie wires.	Record on Form 2215 with proper reference on IRA.
	Granular Backfill (CV)	CU YD	Volumetric Measure (By Computation) –Computations will be based on the dimensions shown in the Plans, described in the Specifications, or designated by the Engineer.	Record measurements and computations with proper reference on IRA.
	Aggregate Backfill (CV)			
	Granular Backfill (LV)	CU YD	Vehicular Measure – Measure & Compute Truck Box Capacities to closest O.1 C.Y. Round the total for each area to the closest C.Y. per day.	Record the uniform load-count of material used on Quantity Tally Sheets with proper reference on IRA.
	Aggregate Backfill (LV)			
	Concrete Structures	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Concrete (Type of Structure)			
2412	Precast Concrete Box Culvert	LIN FT	Linear Foot – Measured as a summation of the nominal laying lengths of the individual sections incorporated into each structure. Transition sections measured for payment as the larger (or more costly) size.	Record measurements with proper reference on IRA.
	Precast Concrete Box Culvert End Section	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
2433	Structure Removals	LUMP SUM	Lump Sum – Engineer will estimate the dollar-value percentage of the completed work.	Record on IRA as a decimal for partial estimate as Source Documentation.
	Remove			
	Place Used			
	Remove	LB	Miscellaneous – Contractor will furnish weights and measurements to Structural Metals Engineer.	Record Structural Metals Engineer's quantities on IRA
	Place Used			

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
2433	Remove	CU YD	Volumetric Measure (By Computation) –Measure length, width and depth and compute Volume. No additional compensation will be made for reinforcement encountered in removal.	Record measurements and computations with proper reference on IRA.
	Remove	SQ FT	Area Computation – Measure and compute the area using the actual width and length measurements.	Record measurements and computations with proper reference on IRA.
	Remove	LIN FT	Linear Foot – Measure longitudinally along the center of the unit.	Record measurements with proper reference on IRA.
	Place Used			
	Anchorages	EACH	UNIT – Physical count.	Record physical count. For the Final, submit these records with proper reference on IRA.
	Remove			
	Place Used			
2442	Remove Existing Bridge	LUMP SUM	Lump Sum – Engineer will estimate the dollar-value percentage of the completed work.	Record on IRA as a decimal for partial estimate as Source Documentation.
	Salvage and Haul Material (bridge)	LUMP SUM	Lump Sum – Engineer will estimate the dollar-value percentage of the completed work.	Record on IRA as a decimal for partial estimate as Source Documentation.
2451	Structure Excavation	CU YD	See Plan Quantity (Method of Measurement) at the beginning of page 9.	See Plan Quantity (Documentation) at the beginning of page 9.
	Granular Backfill (LV)		Vehicular Measure – Measure & Compute Truck Box Capacities to closest O.1 C.Y. Round the total for each area to the closest C.Y. per day.	Record the uniform load-count of material used on Quantity Tally Sheets with proper reference on IRA.
	Aggregate Backfill (LV)			
	Granular Bedding (LV)			
	Aggregate Bedding (LV)			
	Course Filter Aggregate (LV)			
	Fine Filter Aggregate (LV)			
2451	Granular Backfill (CV)	CU YD	Volumetric Measure (By Computation) –Computations will be based on the dimensions shown in the Plans, described in the Specifications, or designated by the Engineer. **(If**	Record measurements and computations with proper reference on IRA. (If denoted (P) quantity in Plan, use Plan Quantity method)
	Aggregate Backfill (CV)			
	Granular Bedding (CV)			

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SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
	Aggregate Bedding (CV)		**denoted (P) quantity in Plan, use Plan Quantity method).**	
	Course Filter Aggregate (CV)			
	Fine Filter Aggregate (CV)			
2452	Untreated Timber Pile Delivered	LIN.FT.	Linear Foot – Measured as a summation of the lengths (as authorized by the Engineer) of acceptable piling delivered to the job site.	Record on Pile Report with proper reference on IRA.
	Treated Timber Pile Delivered			
	C-I-P Concrete Pile Delivered			
	Steel H-Piling Delivered			
	Untreated Timber Pile Driven		Linear Foot – Measure length of acceptable piling driven below cut-off.	
	Treated Timber Pile Driven			
2452	C-I-P Concrete Pile Driven	LIN FT	Linear Foot – Measure length of acceptable piling driven below cut-off.	Record on Pile Report with proper reference on IRA.
	Steel H-Piling Driven			
	Untreated Test Pile, ___ft. long	EACH	Unit – Physical count.	
	Treated Test Pile, ___ft. long			
	C-I-P Concrete Test Pile,__ ft. long			
	Steel H-Test Pile, ____ Feet Long			
	Reinforcement Bars	LB	Weight (By Computation) – Compute the weight of reinforcement bars based on lengths shown in the Plans. The quantity measured will include only those splices which are shown in the Plans. Use table shown in Specifications 2472.4A. Do not include bar supports or tie wires.	Record computations with proper reference on IRA.
	Pile Load Test, Type___	EACH	Unit – Physical count.	Record on Pile Report with proper reference on IRA.
	Pile Re-driving			
	Pile Analysis			
	Pile Points __ in.			
	Pile Tip Protection			

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
2461	Concrete, Mix No. ____	CU YD	See Plan Quantity (Method of Measurement) at the beginning of page 9.	See Plan Quantity (Documentation) at the beginning of page 9.
	Concrete, Mix No. ____	CU YD	Volumetric Measure – computed, theoretical volume based on batch ingredient weights. The quantities so determined will be reduced for payment by all accountable waste.	Record measurements and computations with proper reference on IRA.
2471	Structural Steel		See Spec 2402	
2472	Reinforcement Bars	LB	Weight (By Computation) – Compute the weight of reinforcement bars based on lengths shown in the Plans. The quantity measured will include only those splices which are shown in the Plans. Use table shown in Specifications 2472.4A. Do not include bar supports or tie wires.	Record computations with proper reference on IRA.
2472	Steel Fabric	LB	When computing the weight of Steel Fabric, use the weight per square foot shown in the Plans.	Record measurements and computations with proper reference on IRA.
	Spiral Reinforcement		When computing weight of spiral reinforcement, use the weights shown in a table in the MnDOT Bridge Construction Manual.	Record measurements and computations with proper reference on IRA.
	Couplers (reinforcement bars) T-___	EACH	Unit – Physical count.	Record with proper reference on IRA.
2478	Epoxy Zinc-Rich Paint System (Shop)	SQ FT LUMP SUM	See Plan Quantity (Method of Measurement) at the beginning of page 9.	See Plan Quantity (Documentation) at the beginning of page 9.
	Epoxy Zinc-Rich Paint System (Old)			
	Epoxy Zinc-Rich Paint System (Field)			
2479	Inorganic Zinc-Rich Paint (Shop)	SQ FT	See Plan Quantity (Method of Measurement) at the beginning of page 9.	See Plan Quantity (Documentation) at the beginning of page 9
	Inorganic Zinc-Rich Paint (Field)	SQ FT	See Plan Quantity (Method of Measurement) at the beginning of page 9.	See Plan Quantity (Documentation) at the beginning of page 9.
	Inorganic Zinc-Rich Paint (Shop and Field)			

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
2481	Joint Water Proofing	LIN.FT.	Linear Foot Measure the length of the joints waterproofed.	Record with proper reference on IRA.
2501	Culvert Excavation	CU YD	See Plan Quantity (Method of Measurement) at the beginning of page 9.	See Plan Quantity (Documentation) at the beginning of page 9.
	Culverts (All types sizes, classes and shapes)	LIN FT	Linear Foot – Measured as a summation of the nominal lengths. Transitional sections will be measured as the larger size pipe.	Record measurements with proper reference on IRA.
	Install _			
	Aprons (All types, sizes)	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Safety Apron & Grate			
	RC Dissipater Ring			
	Install			
2502	Drains (All types, sizes)	LIN FT	Linear Foot – Measured along centerline of drain from free outlet to junction with in place pipe, or center of structure.	Record measurements with proper reference on IRA.
	Install			
	Drainage System Type___	LUMP SUM	Lump Sum – Estimate the dollar-value percentage of the completed work.	
	Precast Concrete Headwall	EACH	Unit – Physical count.	
	Install			
2503	Sewer Pipe (All types, classes, and shapes)	LIN FT	Linear Foot – Measured along centerline of sewer from free outlet to junction with in place pipe, or center of structure. Transition sections will be measured as the larger size pipe.	Record measurements with proper reference on IRA.
	Install			
	Install	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
2506	Construct Drainage Structure	LIN FT	Linear Foot – Measure from the invert elevation of the outlet pipe to the bottom of the ring or frame casting, plus 0.70 feet. Measure to the closest 0.1 L.F.	Record measurements with proper reference on IRA.
	Reconstruct Drainage Structure	LIN FT	Linear Foot – Measure from bottom of reconstructed portion to bottom of frame or ring casting, to the closest 0.1 L.F.	

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
2506	Construct Drainage Structure	EACH	Unit – Physical count. Measure as a complete structure including any casting furnished and installed as parts thereof.	Record physical count with proper reference on IRA.
	Casting Assemblies	EACH	Unit – Physical count.	
	Install Castings			
	Adjust Frame and Ring Castings			
2507	Lining Culvert Pipe	LIN.FT.	Linear Feet – Measure the length of the lined culvert.	Record measurements with proper reference on IRA.
2511	Riprap	CU YD	Volumetric Measure (By Computation) – Measure the surface dimensions as staked in the field and multiply by the specified thickness.	Record measurements and computations with proper reference on IRA.
	Granular Filter			
2511	Riprap	TON	Weight (Scale) – Weigh on approved scale. Round each load to closest 0.1 ton. Round total for each area to closest ton per day.	Record the uniform load-count of material used on Quantity Tally Sheets with proper reference on IRA. Record non-uniform loads on weight ticket
	Granular Filter			
	Geotextile Filter	SQ. YD.	Area Computation – Filter material will be measured and computed on the basis of actual surface dimensions as stated, with no allowance for overlaps.	Record measurements and computations with proper reference on IRA.
2512	Gabion	CU YD	See Plan Quantity (Method of Measurement) at the beginning of page 9.	See Plan Quantity (Documentation) at the beginning of page 9.
	Revet Mattress			
2514	Concrete Slope Paving	SQ YD	Area Computation – Paving area will be measured and computed on the basis of actual surface dimensions.	Record measurements and computations with proper reference on IRA.
	Aggregate Slope Paving			
2515	Articulated Block Mat Open Cell, Type___	SQ YD	Area Computation – Revetment Systems will be measured and computed on the basis of actual surface dimensions.	Record measurements and computations with proper reference on IRA.
	Articulated Block Mat Closed Cell, Type___			
	Articulated Interlocking Block Open Cell, Type___			

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
2515	Articulated Interlocking Block Closed Cell, Type___			
	Geotextile Filter Type ___			
2519	CLSM Low Density	CU YD	Volumetric Measure – computed, theoretical volume based on batch ingredient weights. The quantities so determined will be reduced for payment by all accountable waste.	Record measurements and computations with proper reference on IRA.
	CLSM High Density			
2520	Lean Mix Backfill	CU YD		
2521	__Inch Concrete Walk	SQ FT	Area Computation – Compute the square feet of surface area as staked in field. Each uniform thickness will be measured separately by surface area.	Record to show width of material placed with proper reference on IRA.
	__Inch Bituminous Walk			
2531	Concrete Curb & Gutter, Design	LIN FT	Linear Foot – Measure along face of the curb at the gutter line or along centerline of the longitudinal axis.	Record measurements with proper reference on IRA.
	Concrete Curb			
	Concrete Median			
	__Inch Concrete Driveway Pavement	SQ. YD.	Area Computation – Measure length as staked, times plan width, or authorized change in width. Each uniform thickness will be measured separately by surface area.	Record measurements with proper reference on IRA.
	Concrete Median			
2533	Concrete Median Barrier Design___ Type___	LIN FT	Linear Foot – Barriers measured between the centers of end posts in each section.	Record measurements with proper reference on IRA.
	Conc. Med. Barrier/Glass Screen Des.__ Type__			
	Portable Precast Conc. Barrier, Design___			
	Relocate Port. Precast Conc. Barrier,			
2535	Bituminous Curb	LIN FT	Linear Foot – Measure along face of the curb at the gutter line or along centerline of the longitudinal axis.	Record measurements with proper reference on IRA.

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

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2545	Electric Lighting System	LUMP SUM	Lump Sum – Pay the percent completed on each Partial Estimate. Pay 100% of this item upon satisfactory completion.	Record on IRA as a decimal for Partial Estimate as Source Documentation.
	Electric Power System	LUMP SUM SYSTEM	Lump Sum – Pay the percent completed on each Partial Estimate. Pay 100% of this item upon satisfactory completion. Unit – Physical count.	Record on IRA as a decimal for Partial Estimate as Source Documentation. Record physical count with proper reference on IRA.
	Conduit System			
	Sign Lighting System			
	Sign Lighting System Br MTD			
2545	Lighting Unit	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
2545	Luminaire	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Underpass Luminaire			
	Light Base Design___			
	__Inch Rigid Steel Conduit	LIN FT	Linear Foot – Measured by length between the end terminals along centerline of wire as installed.	Record measurements with proper reference on IRA.
	__Inch Intermediate Metallic Conduit			
	__Inch Non-Metallic Conduit			
	Wire or Cable			
	Conduit			
	__ FT Wood Pole, Class__	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Underground Cable Splice			
	Service Equipment			
	Equipment Pad			
	Junction Box			
	Hand hole Grounding Electrode			
2550	___ Traffic Management System	Lump Sum	Lump Sum – Pay the percent completed on each Partial Estimate. Pay 100% of this item upon satisfactory completion.	Record on IRA as a decimal for Partial Estimate as Source Documentation.
	System Integration			

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SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
	___ Foundation	Each	Unit – Physical count.	Record physical count with proper reference on IRA.
	Hand hole Type-__	Each	Unit – Physical count.	Record physical count with proper reference on IRA.
	Junction Box			
	Fiber Optic Splice Vault			
	Outdoor Fiber Splice Enclosure			
	Buried Cable Sign			
	___ Rigid Steel Conduit	LIN FT	Linear Foot – Measured by length between the end terminals along centerline of wire as installed.	Record measurements with proper reference on IRA.
	__Inch Non Metallic Conduit			
2550	__Inch Push Conduit	LIN FT	Linear Foot – Measured by length between the end terminals along centerline of wire as installed.	Record measurements with proper reference on IRA.
	__Cable, __pr. No__			
	__Cable__			
	__Cable,__ Conductor __			
	Fiber Optic Trunk Cable			
	Armored Fiber Optic Pigtail	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Loop Detector Splice			
	Ramp Control Signal, Design__.			
	Flasher Signal			
	Lane Control Signal			
	Closed Circuit Television Assembly			
	Changeable Message Sign, Design__.			
	__Cabinet			
	Service__.			

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
2554	Traffic Barrier Design__		Linear Foot – Measured by length between the end terminals along centerline of wire as installed. Barriers measured between the centers of end posts in each section.	Record measurements with proper reference on IRA.
	Permanent Barricades			
	Install Traffic Barrier Design__			
	Guide Posts Type__	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Install Guide Post Type__			
	Anchorage Assembly			
	End Treatment			
2557	Wire Fence Design__	LIN FT	Linear Foot – Measured by length between the end terminals along centerline of wire as installed. Barriers measured between the centers of end posts in each section.	Record measurements with proper reference on IRA.
	Pedestrian Gate	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Vehicular Gate			
2557	Metal Posts Extensions	LIN FT	Linear Foot – Measured by length between the end terminals along centerline of wire as installed. Barriers measured between the centers of end posts in each section.	Record measurements with proper reference on IRA.
	Wood Brace Assembly	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Metal Brace Assembly			
	Metal Brace Assembly (chain link fence)			
	Electrical Ground			
2564	Concrete Footing Type__	CU YD	Volumetric Measure (By Computation) – Computations based on the length as staked, times the cross-sectional area shown in the Plans or otherwise authorized.	Record measurements with proper reference on IRA.
	Median Barrier Footing	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Sign Support			

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
	Overhead Sign Structure Repair	HOUR	Miscellaneous - Measure the actual number of man-hours required to complete the repair, including use and operation of equipment, travel time within the project limits, and work and materials involved. Crane work and materials required to position and block the truss up off the ground are incidental.	Record hours with proper reference on the I.R.A.
	Structural Steel, specify item & use	LB	Weight *(By* Computation)-The computed mass will be based on the quantity tables included in the plans or approved scale tickets	Record weights with proper reference on the I.R.A.
	Modify Posts	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Sign Panel Type__	SQ FT	Area Computation – Compute the area of each sign type.	Record computations with proper reference on IRA.
	Furnish Sign Panel Type__			
	Sign Panel Overlay Type__			
	Saw Sign Panel Type	LIN FT	Length- measure lengths and record.	
	Install Sign Panel Type	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Sign Legend Revision			
	OH Sign Identification Plate	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
2564	Extend Walkway Support			
	Friction Fuse			
	Keeper Plate			
	Delineator Type__			
	Reference Post Marker			
	Object Marker Type___			
	Bridge Marker #			

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
2565	Full Act T Control Signal System	SYSTEM	Unit – Physical count.	Record physical count with proper reference on IRA.
2571	Coniferous Tree	Tree	Unit – Physical count.	Record physical count with proper reference on IRA.
	Deciduous Tree			
	Ornamental Tree			
	Coniferous Shrub	SHRB		
	Deciduous Shrub			
	Vines	VINE		
	Perennial	PLANT		
2571	Transport Tree (spade size(1)	PLANT	Unit – Physical count.	Record physical count with proper reference on IRA.
	Transport scrub	SHRB		
	Transport Vine	VINE		
2571	Transport Perennial	PLANT	Unit – Physical count.	Record physical count with proper reference on IRA.
2572	Temporary Fence	LIN FT	Linear Foot - Measure along the base of the fence from outside to outside of the end posts for each section of fence.	Record location and length with proper reference on IRA.
	Clean Root Cutting		Linear Foot - Measure distance.	
	Water	GALLON	Volumetric Measure - Measure each load by sticking, by weight or by calibrated meter. When a municipal meter is used, a certificate from the municipal officer is acceptable.	Record volumes with proper reference on IRA.
2573	Prune Trees	HOUR	Miscellaneous - Measured by the number of hours of actual equipment working time and necessary traveling time within the project limits.	Record equipment hours with proper reference on the I.R.A.
	Tree Growth Retardant	GALLON	Invoice Documentation - Record the number of containers on the Invoice and initial.	Record physical count with proper reference on IRA.
	Bale Barrier	EACH	Unit – Physical count.	
	Silt Fence, Type__	LIN FT	Linear Foot - Measure along the base of the fence from outside to outside of the end posts for each section of fence. Measure down drain or Curtain length furnished and acceptably installed.	Record location and length with proper reference on IRA.
	Sand Bag Barrier			
	Floatation Silt Curtain, Type__			
	Temporary Slope Drain			

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
	Filter Berm Type__			
	Sediment Control Log Type__			
2573	Sediment Trap Excavation	CU YD	Cross Section Measure (EV Excavated Volume) – Compute volume using the average-end area method of material in its original position. Sediment removed will be measured and added to the quantity of excavation. *Note: If no bid* item is *provided for Sediment Trap Excavation, a back sheet item must be created and paid for at the unit price of $3.00 per cubic yard*.	Record x-section notes in x-section book. Plot areas and show volume computations on x-section rolls, submit the x-section books and rolls with proper reference on the I.R.A.
	Water Treatment	LUMP SUM	Lump Sum - Pay the percent completed on each Partial Estimate. Pay 100% of this item upon satisfactory comp	Record on the I.R.A. as a decimal for the Partial Estimate, submit the I.R.A. as Source Documentation.
	Water Treatment Type__	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Sediment Removal, Backhoe or Vacuum Truck	HOUR	Miscellaneous - Measured by the number of hours of actual equipment working time and necessary traveling time within the project limits.	Record equipment hours with proper reference on the I.R.A.
	Storm Drain Inlet Protection	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Storm Drain Inlet Protection	LUMP SUM	Lump Sum - Pay the percent completed on each Partial Estimate. Pay 100% of this item upon satisfactory comp	Record on the I.R.A. as a decimal for the Partial Estimate, submit the I.R.A. as Source Documentation.
	Stabilized Construction Exit			
	Wheel Wash Off	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Liquid Flocculent	GALLON	Invoice Documentation - Record the number of containers on the Invoice and initial.	
	Flocculent Sock	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Granular Flocculent	LB	Weight (By Computation, Sack) – Count the number of sacks used and multiply by the mass per sack.	Sack Method – Record the computations, utilizing the commercial tickets attached to the package or the weights printed on the package.
	Erosion Control Supervisor	LUMP SUM	Lump Sum - Pay the percent completed on each Partial Estimate. Pay 100% of this item upon satisfactory comp	Record on the I.R.A. as a decimal for the Partial Estimate, submit the I.R.A. as Source Documentation.

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SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
	Culvert Ends Controls	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
2574	Culvert Ends Controls	LUMP SUM	Lump Sum - Pay the percent completed on each Partial Estimate. Pay 100% of this item upon satisfactory comp	Record on the I.R.A. as a decimal for the Partial Estimate, submit the I.R.A. as Source Documentation.
2574	Fertilizer, Type__	LB TON	Weight (By Computation, Sack) – Count the number of sacks used and multiply by the mass per sack. Weight (By Computation, Invoice) – Check off all the material delivered against that shown on the supplier's invoice. Weight (Scale) – use (1) or (2), whichever method is most appropriate. (1) Weigh on approved scales. (2) Use the mass from the manufacturer's Bill of Lading or approved commercial delivery tickets. Material used in re-doing areas by order of the Engineer, after the original area was accepted, will be added to the original quantities.	Sack Method – Record the computations, utilizing the commercial tickets attached to the package or the weights printed on the package. Invoice Documentation – Record the number of containers on the Invoice and initial with proper reference on IRA. Record the mass from the commercial delivery ticket with proper reference on IRA.
	Iron Sulfate	LB GALLON	Weight (By Computation, Sack) - Count the number of sacks used and multiply by the mass per sack. Weight (By Computation, Invoice) - Check off all the material delivered against that shown on the supplier's invoice. In either case, material used in re-doing areas by order of the Engineer, after the original area was accepted, will be added to the original quantities.	Invoice Documentation - Record the number of containers on the Invoice and initial. For the Final, submit the computations or invoices, whichever is most appropriate, with proper reference on the I.R.A.
	Activated Charcoal			
	Plant Hormones			
	Hydrophilic Polymers			
	Mycorrhizal Inoculum			
	Rhizobium Inoculum			
	Compost Tea			

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SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
	__ Topsoil Borrow	CU YD TON	Weight (Scale) – use (1) or (2), whichever method is most appropriate. (1) Weigh on approved scales. (2) Use the mass from the manufacturer's Bill of Lading or approved commercial delivery tickets. Material used in re-doing areas by order of the Engineer, after the original area was accepted, will be added to the original quantities. Vehicular Measure – Measure & Compute Truck Box Capacities to closest O.1 C.Y. Round the total for each area to the closest C.Y. per day.	Record the mass from the commercial delivery ticket with proper reference on IRA. Record vehicle measurements and volume computations. Record the load-count of material used on Quantity Tally Sheets with proper reference on IRA.
	Compost, Grade 2 and 3			
	Compost, Grade 1			
2574	Sub soiling	ACRE	Area Computation - Measure and compute surface area covered.	Record measurements and computations with proper reference on the I.R.A.
	Lime	LB	Weight (By Computation, Sack) - Count the number of sacks used and multiply by the mass per sack. Weight (By Computation, Invoice) - Check off all the material delivered against that shown on the supplier's invoice. In either case, material used in re-doing areas by order of the Engineer, after the original area was accepted, will be added to the original quantities.	Invoice Documentation - Record the number of containers on the Invoice and initial. For the Final, submit the computations or invoices, whichever is most appropriate, with proper reference on the I.R.A.
	Soil Bed Preparation Soil Tracking	ACRE	Area Computation - Measure and compute surface area covered.	Record measurements and computations with proper reference on the I.R.A.

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
2575	Seeding	ACRE LB	Area Computation - Measure and compute surface area covered. Area Computation - Measure and compute surface area covered. Weight (By Computation, Sack) - Count the number of sacks used and multiply by the mass per sack. Weight (By Computation, Invoice) - Check off all the material delivered against that shown on the supplier's invoice. In either case, material used in re-doing areas by order of the Engineer, after the original area was accepted, will be added to the original quantities.	Record measurements and computations with proper reference on the I.R.A. Record measurements and computations with proper reference on the I.R.A. Invoice Documentation - Record the number of containers on the Invoice and initial. For the Final, submit the computations or invoices, whichever is most appropriate, with proper reference on the I.R.A.
	Seed, Mixture__, or species			
	Sodding, Type__	SQ YD	Area Computation - Measure and compute surface area covered.	Record measurements and computations with proper reference on the I.R.A.
	Mulch Material, Type__	TON	Weight (By Computation) - Count the number of bales used and multiply by the nominal mass per bale in re-doing areas by order of the Engineer, after the original area was accepted, will be added to the original quantity.	Record the computations, with proper reference on the I.R.A.
	Mulch Material, Type__	CU YD	Volumetric Measure (By Computation) - Measure length, width and depth, and compute volume.	Record measurements and computations with proper reference on the I.R.A.
	Temporary Poly Covering	SQ YD	Area Computation - Measure and compute surface area covered.	Record measurements and computations with proper reference on the I.R.A.
	Disc Anchoring / Mulch Material Type 4	ACRE	Area Computation - Measure and compute surface area covered.	Record measurements and computations with proper reference on the I.R.A.
	Erosion Control Blankets Cat.___	SQ YD	Area Computation - Measure and compute surface area covered.	Record measurements and computations with proper reference on the I.R.A.
2575	Turf Reinforcement Mat, Type__.	SQ YD	Area Computation - Measure and compute surface area covered.	Record measurements and computations with proper reference on the I.R.A.
	Compost Blanket			
	Water	M GALLON	Volumetric Measure - Measure each load by sticking, by weight or by calibrated meter. When a municipal meter is used, a certificate from the municipal officer is acceptable.	Record volumes with proper reference on IRA.

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SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
	Mowing	ACRE	Area Computation - Measure and compute surface area covered.	Record measurements and computations with proper reference on the I.R.A.
	Weed Spraying			
	Weed Spray Mixture	GALLON	Container Method - Record the computations utilizing the volume printed on drums or pails. Invoice Documentation - Record the number of pails or drums acceptably used and compute gallons used on invoice and initial.	Miscellaneous - Count the number of containers used and multiply by the gallons printed on container. Miscellaneous - Use material suppliers invoice, check off all the material acceptably used.
	Turf Establishment	LUMP SUM	Lump Sum - Pay the percent completed on each Partial Estimate. Pay 100% of this item upon satisfactory comp	Record on the I.R.A. as a decimal for the Partial Estimate, submit the I.R.A. as Source Documentation.
	Shoulder Mulch Over Spray	LB	Weight (By Computation, Sack) - Count the number of sacks used and multiply by the mass per sack. Weight (By Computation, Invoice) - Check off all the material delivered against that shown on the supplier's invoice. In either case, material used in re-doing areas by order of the Engineer, after the original area was accepted, will be added to the original quantities.	Invoice Documentation - Record the number of containers on the Invoice and initial. For the Final, submit the computations or invoices, whichever is most appropriate, with proper reference on the I.R.A.
	Hydraulic Tackifier, Type__			
	Hydraulic Tackifier, Type__	SQ YD	Area Computation - Measure and compute surface area covered.	Record measurements and computations with proper reference on the I.R.A.
2575	Rapid Stabilizing Method 1 or Method 2	ACRE	Area Computation - Measure and compute surface area covered.	Record measurements and computations with proper reference on the I.R.A.

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SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
	Rapid Stabilizing Method 3	M GALLONS	Volumetric Measure (Liquid) - Load-Count Method – Measure and compute tank capacities to the closest 100 gallons and count the number of loads used. Meter Method. Use calibrated meter, and modify Form 21236 to show beginning and ending reading. When a municipal meter is used, a certificate from the municipal officer is acceptable. Computations can be based on the cu 7.481 gallon per cubic feet the net density of the water, at 8.345 lbs. per gallon	Record volumes with proper reference on IRA.
	Rapid Stabilizing Method 4	SQ YD	Area Computation - Measure and compute surface area covered.	Record measurements and computations with proper reference on the I.R.A.
	Rapid Stabilizing Method 5	TON	Weight (Mass) (Scale) - Use (1) or (2) whichever method is most appropriate. (1) Weigh on approved scales. (2) Use the mass from the manufacturer's Bill of Lading or commercial delivery tickets.	Record the weight from the commercial delivery ticket, submit with proper reference on the I.R.A.
2577	Watling	LIN FT	Linear Feet - Measure length of work actually performed.	Record measurements with proper reference on the I.R.A.
	Brush Layering	LIN FT		
	Granular Channel Liner	CU YD	Volumetric Measure (By Computation) - Measure length, width and depth, and compute volume.	Record measurements and computations with proper reference on the I.R.A.
	Live Stakes	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Concrete Armor Unit (specify size)			
	Concrete Armor Unit (specify size)	SQ YD	Area Computation - Measure and compute surface area covered by each size. The outermost extremity of the units shall be used in the measurement.	Record measurements and computations with proper reference on the I.R.A.
2581	Removable Preformed Plastic Marking	LIN FT	Linear Feet - Measure actual length of each different width, type, etc., of pavement marking furnished and placed as specified. Broken line will be measured by the actual length of material used and will not include the gap between the broken lines.	Record measurements with proper reference on the I.R.A.

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

SPEC NO	CONTRACT ITEMS	UNIT	METHOD OF MEASUREMENT	DOCUMENTATION
2582	Pavement Message (Specify)	EACH	Unit – Physical count.	Record physical count with proper reference on IRA.
	Linear Marking, __in.__width	LIN FT	Linear Feet - Measure actual length of each different width, type, etc., of pavement marking furnished and placed as specified. Broken line will be measured by the actual length of material used and will not include the gap between the broken lines.	Record measurements with proper reference on the I.R.A.
	Cross Walk Marking	SQ FT	Area Computation – Measure and compute the area using the actual width and length measurements of each individual component.	Record measurements and computations with proper reference on IRA.

Please refer any questions regarding this document to:

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DOCUMENTATION of CONSTRUCTION PAY QUANTITIES

Field Record Documentation

SP

SAP _____ Book # _____ Page # _____

Unit of Measure _____ Group # _____

Item Name _____ Item # _____

Quantity this entry	Accum. Quantity	Entered, Measured, Computed by/Date	Checked by/Date to IRA Sheet	Location, calculations, drawings and remarks with entry or on back of page.

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