CHAPTER 2
Setting up a Contract, Book Format,
Calc Book, Diaries & Construction Reports,
Field Lab Books, Sig Figs, Metric Conversion Factors,
and Method of Payment

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DOCUMENTATION REQUIREMENT
SECTION A
SETTING UP A CONTRACT

The first item of business is setting up the files for the contract following the outline as described in Chapter 1, (Organization of Project Documents, etc.). Each filing system category is divided into divisions. Each division listed shall be set up with a titled file divider and the dividers may be used on subsequent contracts. A divider shall be set up even if no activity for that division is anticipated. This will provide room in the file for unanticipated material as it is received.

There shall be a separate category 1 is for Contract Files and 2 is for Material and Testing files for each contract. Every filing system shall contain the major divisions listed in Chapter 1 (**Organization of Project Documents, etc.).** Each division in the filing system is further divided into subdivisions, representing the individual file folders for each contract item. **The subdivisions, however, are utilized only when relative to a specific contract.** The Materials Checklist, Chapter 1 (Organization of Project Documents, etc.), shall be used to assist in setting up the subdivisions for the Material and Testing section of the contract files. By using the Material Checklist a file shall be done on all the items on the checklist that need a sample or certification. Make sure to check with the Materials Division on items that are added to the contract through LOA's and Change Orders to see if samples or certifications are required.

All file folders, except progress payments must be 8-1/2" x 11". Certified payrolls can also be placed in legal (8 ½" x 14") size files if needed. There may be times when additional file subdivisions may have to be created that are not shown in Chapter 1 (Organization of Project Documents, etc.) or on the Material Checklist. Care must be taken to cross reference material that may be filed elsewhere in the office such as in loose leaf binders, etc.

When the Resident Engineer receives the plans for a project, the Resident Engineer shall evaluate the items and quantities involved, and then by using this Manual set up the books accordingly.

This manual is based on the Unit of Measure (UOM) in making out field books. When making out the field books if a required item of work is not illustrated in a particular chapter, use an illustration that has the same UOM. Remember, some UOM's have several different formats. Make sure to use the appropriate format for the item you are working on. If you are not sure, please call Headquarters Construction for assistance.

The information for book preparation is taken from the estimate of quantities (aka "3 sheets", 3A, 3B, etc.), profile sheets, summary sheets, and all structure lists in the contract plans.

Only a hard-leaded (3H or 4H) pencil shall be used in the books. The Officeperson may use red ink or red pencil to indicate the progress payment number, any corrections made, and initials. Headquarters Construction Staff shall use green ink.

Do not tape drawings in books and do not use corrective tape, ink, correction fluid or <u>erase</u> in the books. If mistakes are made or stationing varies in any book, line them out and write the correction above it. Ditto marks and arrows for consecutive entries are not allowed.

Forms change periodically, please assure that you are using the most current form available, see Chapter 26 (Distribution of Documents).

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All forms (excluding scale sheets) must be done in black or blue ink. Do not use correction fluid on any original forms used as source documents.

All field books used on the project (survey books, field lab books, field books for pay quantities, record of delivery books, and load books) as described in this Manual **shall have each page numbered 1 thru 80 at the top right-hand corner.**

Field books used for documentation of pay quantities and Record of Delivery (for bill of ladings) books as described in this Manual shall have the significant figure written at the top of the right-hand side of the page, according to the item placed on the page. All entries must be entered as called out in the plans and document left, right, or centerline, where applicable. **Place one item per page in the field books.**

The outline of the individual books can be done by the **Officeperson** in advance or by the **Inspector** during a slack period. By entering as much information as possible in the books **(including significant figures, AEB numbers, and formulas for each item as shown throughout this Manual)** prior to construction, it will be easier to document the work as it is performed. This will allow more time to be spent at the primary job of quality control.

The "Preliminary" Agreement Estimate outlining AEB's is generated by Design when a contract is advertised. The estimated quantities and engineer's reasonable price for each item are listed in each AEB. When the contract is awarded, the reasonable prices are replaced with the contractor's bid prices and an Agreement Estimate as described and illustrated in Chapter 1 (Organization of Project Documents, etc.), is generated.

When making out field books at the beginning of a contract make sure the final plan quantities used are according to the Agreement Estimate that is received after the contract has been awarded. If using the Preliminary Agreement Estimate to prepare the field books. Make sure all plan quantities are rechecked when the awarded Agreement Estimate has been received.

Major structure books shall only list **one** structure per field book. On smaller projects where the documentation does not take up too much room in the books, it is permissible to record the documentation for several closely related items in one field book. When this is done, the books shall be setup as illustrated in Chapter 13 (Pipe, RCB, Misc Structures, etc.). Care must be taken to properly label and index the books to make it easy to locate the documentation for these items. **Be sure to avoid crowding the books!**

All new items (AP0 0000 or PR0 0000) created by approved change orders shall be documented in the appropriate book with like items in accordance with this Manual. **Books for CHANGE ORDER items exclusively (original and/or new items) are not acceptable.**

When a change order has been approved, it is the responsibility of the **Officeperson** to assure that all items listed on the Estimate of Cost (attached to the change order) have been documented properly. **When increasing or decreasing an existing (numeric, AP0, or PRO) item, the plan quantity at the top of the page must be adjusted and the change order number placed next to the updated plan quantity.** An **entry** in the field book, either an alpha or numeric item, which has been added or adjusted per a change order, must have the change order number in the remarks column. **If an item on the Estimate of Cost is an AP0 or PR0 item it will be placed on a new page in the field book with the AP0 or PR0 number and change order number. These items shall be entered as the item number and the plan quantity will be the plan on the Estimate of Cost.**

If the AP0 or PR0 is replacing an existing item, the existing item shall be crossed off and the AP0 or PR0 number will be written above. **Remember, both items shall be recapped on the books recap page.** If the change order addresses items entered on a spreadsheet, make sure to update the plan quantity at the top of the spreadsheet and place the change order number next to it. It is the responsibility of the **Officeperson** to assure that the **Inspectors** receive a copy of the change order.

Plan quantity can only be changed by a supplemental notice or a Change order. Design changes, E-mails, memos, etc. do not change the plan quantity. Design changes on plan sheets are to become part of the As Builts. E-mails and memos shall be attached to a Calculation sheet (Form No. 040-034). The top portion of the Calculation sheet is to be completed and then filed in the CALCULATION FOLDER. This information will be the backup for any change under or over the plan quantity.

An explanation is required in the field books, on all items that either under or overrun the plan quantity.

When an error is made in a field book, DO NOT enter a negative entry to correct the error. Cross out the incorrect amount on the original entry and place the correct amount above it. Place the payment number where the correction was made next to the original payment number. Example: the original payment # was 5 and the payment # where the correction was made is 7, so the Pmt# column will show 5/7.

A helpful tool to get a start on where items shall be placed when setting up a contract is using the Estimate of Quantities in the contract plans. An outline shall be done as illustrated on pages 2-4 thru 2-6.

At the beginning of each chapter in this manual there will be instructions on how to setup the documentation for that particular chapter.

If an item has a small plan quantity, it is acceptable to place that item in a MISC book.

ESTIMATE OF QUANTITIES

Quantities Shown are Approximate Only and are Subject to Increase or Decrease

TO BE CONTRACTED

ITEM NO.	Project No. STP-0160(016)	Project No. IM-015-1(126)	TOTAL	UNIT	ITEM
110 0100	300	---	300	HOUR	TRAINING (4 TRAINEES)-Trainee Report & spreadsheet
200 0001	40	10	50	HOUR	SURVEY CREW - Rent Equipment sheet & spreadsheet
201 0032	LS	---	LS	---	URBAN CLEARING-Lump Sum sheet
201 0512	2	---	2	EACH	REMOVE TREES (6-INCHES TO 12-INCHES)-Removal book
202 0008	LS	---	LS	---	REMOVAL OF BRIDGE-Lump Sum sheet
202 0076	5	---	5	EACH	REMOVE END SECTION-Removal book
202 0256	LS	---	LS	---	REMOVAL OF SIGNAL SYSTEM-Lump Sum sheet
202 0417	---	2	2	EACH	REMOVE AND RESET GUARDRAIL END TREATMENT-Removal book
202 1052	---	3,190	3,190	LINFT	REMOVE AND RESET CONCRETE BARRIER RAIL-Removal book
202 1056	1,000	---	1,000	LINFT	REMOVE & RESET CHAIN-LINK FENCE-Removal book
202 1152	10,200	5,800	16,000	SQYD	REMOVAL OF BITUMINOUS SURFACE (COLD MILLING)-Removal book
202 1160	4	1	5	MILE	REMOVAL OF BITUMINOUS SURFACE-Removal book
202 1184	150	---	150	CUYD	REMOVAL OF COMPOSIITE SURFACE-Removal book
202 1304	1,690	---	1,690	LINFT	REMOVAL OF FENCE-Removal book
202 2020	600	---	600	LINFT	REMOVE & RESET GUARDRAIL-Removal book
203 0508	8,820	---	8,820	CUYD	ROADWAY EXCAVATION-Earthwork book
203 0520	3,000	---	3,000	CUYD	CHANNEL EXCAVATION-Earthwork & Pipe book
203 0540	2,210	---	2,210	CUYD	BORROW EMBANKMENT-Earthwork book
203 0548	2,159	---	2,159	CUYD	SELECTED BARROW EMBANKMENT-Earthwork book
203 0556	3	1	4	STA	V-TYPE DITCHES-Misc book
203 0656	1,230	---	1,230	SQYD	GEOTEXTILE-Pipe book
206 0500	15,620	20	15,640	CUYD	STRUCTURE EXCAVATION-Pipe, Structure, & Retaining Wall book
207 0504	12,220	10	12,230	CUYD	GRANULAR BACKFILL-Pipe, Structure, Retaining Wall, & Landscaping book
211 0524	3	---	3	ACRE	SEEDING (TYPE A)-Landscaping or Misc book
211 0604	68	5	73	ACRE	SOIL STABILIZER-Landscaping or Misc book
212 0028	150	---	150	EACH	PLANTS (GROUP A-5)-Landscaping book
212 1000	3	---	3	ACRE	SITE PREPARATION)-Landscaping book
212 1004	220	---	220	CUYD	TOPSOIL-Landscaping book
212 1032	100	---	100	POUND	FERTILIZER (COMMERCIAL)-Landscaping book
212 1040	490	---	490	GALLON	FERTILIZER-Landscaping book
212 1060	2,860	---	2,860	SQYD	GRANITE MULCH-Landscaping book
213 1004	2,710	---	2,710	LINFT	1/2-INCH POLYCHLORIDE PIPE (FLEXABLE)-Landscaping book
302 0500	80,000	---	80,000	TON	TYPE 1 CLASS B AGGREGATE BASE-Load book & spreadsheet
302 0592	2,000	---	2,000	CUYD	TYPE 1 CLASS A AGGREGATE BASE-Misc book
305 0300	6	4	10	MILE	PULVERIZE EXIST SURFACE-Roadbed Mod book
305 0516	60,779	21,354	82,133	SQYD	PROCESSING FOR ROADBED MODIFICATION-Roadbed Mod book
402 0660	1,500	520	2,020	SQYD	PLANTMIXING MISCELLANEOUS AREAS-Misc book
402 6002	22,000	---	22,000	TON	PLANTMIX SURFACING (TYPE 2C)(WET)-Load book & spreadsheet
403 0554	8,000	---	8,000	TON	PLANTMIX OPEN-GRADED SURFACING (1/2-INCH)(WET)-Load bk & spreadsheet
404 0570	419	111	530	TON	EMULSIFIED ASPHALT, TYPE CMS-2S-Cold-recycled book
404 0571	92	25	117	TON	EMULSIFIED ASPHALT, TYPE CMS-2S (DILUTED)-Cold-recycled book
404 0580	187,000	50,000	237,000	SQYD	RECYCLED BITUMINOUS SURFACE (3-INCH DEPTH)-Cold-recycled book
404 2053	332	88	420	TONS	LIME (COLD RECYCLE)-Cold-recycled book
405 0516	275	---	275	TON	EMULSIFIED ASPHALT, TYPE SS-1H (DILUTED)-Liquid Asphalt book
406 0500	260	---	260	TON	LIQUID ASPHALT, TYPE MC-70-Liquid Asphalt book
408 0512	25	---	25	POUND	RUBBER ADDITIVE-Misc book

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ESTIMATE OF QUANTITIES (continued)

ITEM NO.	Project No. STP-0160(016)	Project No. IM-015-1(126)	TOTAL	UNIT	ITEM
408 2108	800	---	800	TON	PORTLAND CEMENT-PCCP book
409 0508	3,200	---	3,200	SQYD	PORTLAND CEMENT CONCRETE PAVEMENT (8-INCHES)-PCCP book
409 0666	2,500	---	2,500	GALLON	PCCP CURING COMPOUND, WAX BASE-PCCP book
409 0560	284,000	---	284,000	LINFT	SAW & SEAL TRANSVERSE WEAKENED PLANE JOINTS-PCCP book
502 0065	42	---	42	EACH	LAMINATED ELASTOMERIC BEARING PAD-Structure book
502 0504	434	---	434	CUYD	CLASS A CONCRETE (MINOR)-Pipe book
502 0508	8	---	8	CUYD	CLASS A CONCRETE (ISLAND PAVING)-C & G book
502 0616	667	---	667	LINFT	PORTABLE PRECAST CONCRETE BARRIER RAIL-C & G or Misc book
502 0628	1,995	---	1,995	LINFT	CONCRETE BARRIER RAIL (TYPE A)-C & G book
502 0828	~~2,643~~ 4500 Supp #2		~~2,643~~ 4500	CUYD	CLASS A CONCRETE, MODIFIED (MAJOR)-Structure & Retaining Wall book
502 0848	4,500	---	4,500	CUYD	CLASS D CONCRETE, MODIFIED (MAJOR)-Structure book
502 0936	320	---	320	LINFT	STRIP SEAL EXPANSION JOINT (4-INCH MOVEMENT)-Structure book
502 0976	10	200	210	CUFT	ELASTOMERIC CONCRETE-Structure & Misc book
502 1008	5,170	---	5,170	SQYD	GROOVE CONCRETE DECK SLAB-Structure book
502 1010	490	---	490	GAL	BRIDGE DECK CURING COMPOUND-Structure book
505 0500	1,164,058		1,164,058	POUND	REINFORCING STEEL-Structure, Retaining Wall, & Pipe book
603 0520	4,298	---	4,298	LINFT	18-INCH REINFORCED CONCRETE PIPE, CLASS III-Pipe book
604 2182	15	---	15	EACH	18-INCH METAL END SECTION (SAFETY TYPE)-Pipe book
609 0112	6	---	6	EACH	ADJUSTING COVERS (METHOD A)-Misc book
609 0116	5	---	5	EACH	ADJUSTING COVERS (METHOD B)-Misc book
609 0120	4	---	4	EACH	ADJUSTING COVERS (METHOD C)-Misc book
609 0500	1,080	---	1,080	POUND	CASTINGS-Misc book
609 0504	27,000	---	27,000	POUND	STRUCTURAL STEEL GRATES-Pipe book
610 0501	100	---	100	CUYD	RIPRAP (CLASS 150)-Pipe book
610 0601	80	---	80	CUYD	RIPRAP BEDDING, (CLASS 150)-Pipe book
611 0508	15,000	6,500	21,500	CUYD	CLASS A CONCRETE APRONS-C & G or Misc book
612 0100	1,980	---	1,980	SQYD	GRAFFITI RESISTANT COATING-Retaining Wall book
613 0604	3,026	---	3,026	LINFT	CLASS A CONCRETE GLUE DOWN CURB (TYPE A)-C & G book
613 0732	5,485	---	5,485	LINFT	CLASS A CONCRETE CURB & GUTTER (TYPE 5)-C & G book
613 0864	26	---	26	SQYD	CLASS A CONCRETE SIDEWALK (4-INCH)-C & G book
614 0000	7,820	---	7,820	SQFT	PAINTING (CONC. WALL GRAPHICS)-Landscaping book
616 0712	7,900	---	7,900	LINFT	72-INCH CHAIN LINK FENCE-Fence book
616 0916	2	---	2	EACH	12-FOOT SWING GATE (DOUBLE)-Fence book
618 0038	10	---	10	EACH	TRAILING END ANCHOR-Guardrail book
618 0524	2,500	---	2,500	LINFT	GALVANIZED GUARDRAIL-Guardrail book
619 0044	25	244	269	EACH	GUIDE POSTS (FLEXIBLE)-Guidepost book
619 0077	---	18	18	EACH	OBJECT MARKERS, TYPE 2 (MODIFIED)-Guidepost book
621 0006	---	8	8	EACH	PERPETUATE SURVEY MONUMENTS-Misc book
623 0080	15	---	15	EACH	NO. 7 PULL BOX-Electrical book
623 0084	2	---	2	EACH	NO. 9 PULL BOX-Electrical book
623 0088	3	---	3	EACH	JUNCTION BOX-Electrical book
623 0590	2	---	2	EACH	VEHICLE TRAFFIC CLASSIFIER (TYPE 1)-Electrical book
623 0764	LS	---	LS	---	REMOVAL OF EXISTING LIGHTING SYSTEM-Lump Sum sheet
623 1028	10,850	---	10,850	LINFT	3-INCH CONDUIT-Electrical book
623 1036	2,265	---	2,265	LINFT	6-INCH CONDUIT-Structure, Misc, & Electrical book
623 1269	5,590	---	5,590	LINFT	SINGLE MODE FIBER OPTIC CABLE (72 FIBER)-Electrical book
623 1724	16	---	16	EACH	LOOP DETECTOR (6 FOOT X 6 FOOT)-Electrical book

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ESTIMATE OF QUANTITIES (continued)

ITEM NO.	Project No. STP-0160(016)	Project No. IM-015-1(126)	TOTAL	UNIT	ITEM
623 1269	5,590	---	5,590	LINFT	SINGLE MODE FIBER OPTIC CABLE (72 FIBER)- Electrical book
623 1724	16	---	16	EACH	LOOP DETECTOR (6 FOOT X 6 FOOT)- Electrical book
623 1732	572	---	572	LINFT	LEAD-IN CABLE FOR LOOP DETECTORS- Electrical book
623 2083	200	---	200	LINFT	DIRECTIONAL DRILLING- Electrical book
624 0004	1,700	300	2,000	HOUR	FLAGGER- Flagging sheets & Spreadsheet
624 0016	210	90	300	DAY	TRAFFIC CONTROL SUPERVISOR- Rent Equipment sheet & spreadsheet
624 0036	50	---	50	HOUR	RENT EQUIPMENT (DUMP TRUCK)- Rent Equipment sheet & spreadsheet
624 0052	50	---	50	HOUR	RENT EQUIPMENT (PILOT CAR)- Rent Equipment sheet & spreadsheet
624 0151	10	2	12	MONTH	RENT EQUIPMENT (OFFICE SPACE)- Rent Equipment sheet & spreadsheet
625 0004	420	---	420	EACH	RENT TRAFFIC CONES- Rent Const. Signs, Etc. book
625 0036	150	---	150	EACH	RENT CONSTRUCTION BARRICADES (TYPE 111B)- Rent Const. Signs, Etc. book
625 0044	6	---	6	EACH	RENT CHANGEABLE MISSAGE SIGN- Rent Const. Signs, Etc. book
625 0060	2	1	3	EACH	RENT ARROW BOARD (TYPE C)- Rent Const. Signs, Etc. book
625 0072	202	---	202	EACH	RENT TRAFFIC DRUMS- Rent Const. Signs, Etc. book
625 0089	2	---	2	EACH	RENT IMPACT ATTENUATOR (45 MPH)- Rent Const. Signs, Etc. book
625 0091	---	1	1	EACH	RENT IMPACT ATTENUATOR (65 MPH)- Rent Const. Signs, Etc. book
625 0092	1	---	1	EACH	RENT TRUCK-MOUNTED IMPACT ATTENUATOR- Rent Const. Signs, Etc. book
625 0500	2,942	344	3,286	SQFT	RENT CONSTRUCTION SIGNS- Rent Const. Signs, Etc. book
625 0512	42	420	462	LINFT	RENT PORTABLE PRECAST CONCRETE BARRIER RAIL- Rent Const. Signs, Etc. book
627 0012	---	1	1	EACH	PERMANENT OVERHEAD SIGN SUPPORT STRUCTURES, REMOVE -Signs book
627 0508	1,700	517	2,217	SQFT	PERMANENT SIGNS (GROUND MOUNTED) (METAL SUPPORTS)- Signs book
627 0516	900	200	1,100	SQFT	PERMANENT SIGNS (GROUND MOUNTED) (TIMBER SUPPORTS)- Signs book
627 0520	3	---	3	SQFT	PERMANENT SIGN PANELS (OVERHEAD)- Signs book
627 0524	5	1	6	SQFT	PERMANENT SIGN PANELS (PANELS ONLY)- Signs book
627 0532	2,643	1,200	3,843	SQFT	PERMANENT SIGNS, REMOVE- Signs book
627 0536	61	---	61	SQFT	PERMANENT SIGNS, REMOVE AND RESET- Signs book
629 0100	210	90	300	DAY	TIME RELATED OVERHEAD- No Documentation
632 2026	8	---	8	MILE	EPOXY PAVEMENT STRIPING (SOLID WHITE)- Misc. or Striping book
633 0000	3,586	6,447	10,033	EACH	NON-REFLECTIVE PAVEMENT MARKERS- Misc. or Striping book
634 0620	5,795	---	5,795	SQFT	PERMANENT PAVEMENT MARKING FILM (TYPE 2) (VARIES)- Misc. or Striping book
646 0516	2,000	---	2,000	SQFT	BRIDGE DECK PREPARATION- Structure book
647 0508	300	200	500	GALLON	PAINT-ON-WATERPROOFING- Misc book
680 0510	210	90	300	DAY	BIOLOGIST- Rent Equipment sheet & spreadsheet

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Once the outline is complete, go through the plans and tag each structure list, the Summary of Construction Signs, the Sign Summary sheets, the Summary of Earthwork sheets, the Profile sheets, and any other areas that show information on items and quantities that will assist in setting up the field books. Compare all items to the Estimate of Quantities outline and address any items that have not already been addressed.

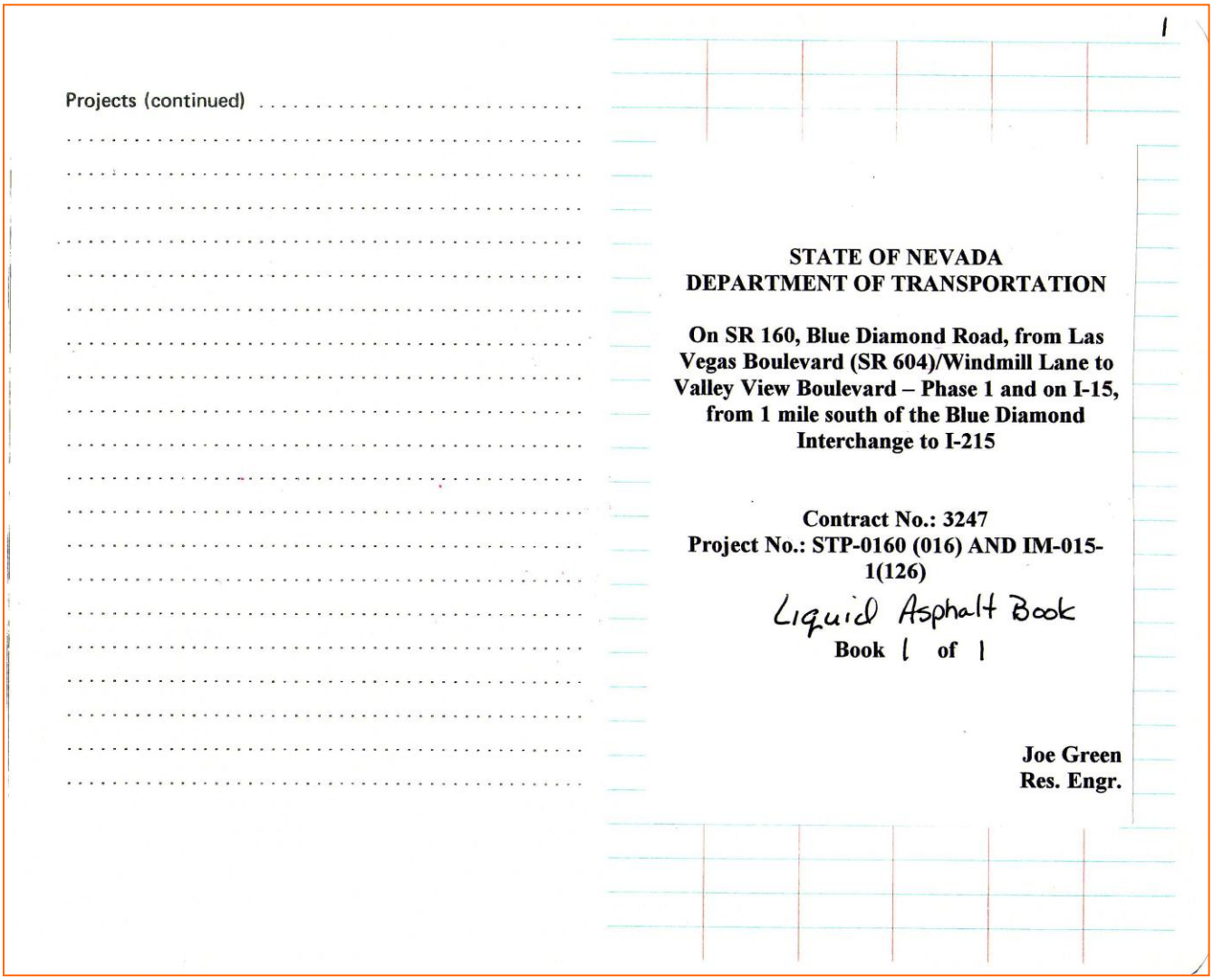
DOCUMENTATION REQUIREMENT
SECTION B
BOOK FORMAT
(TITLE PAGE, INDEX, INITIAL KEY, AND RECAP PAGE)

All field books and Field Lab Books shall contain all the information as illustrated on pages 2-7 thru 2-9:

Page 1 - **Title Page**
This page shall contain the following information:

State of Nevada
Department of Transportation
Location description
Contract number
Project number
Book title and number
Name of Resident Engineer

Location description, Contract Number, and Project number are located on the front of the Special Provisions for the contract. A label must be used and all information must be typed except the book title and number, which will be hand written.



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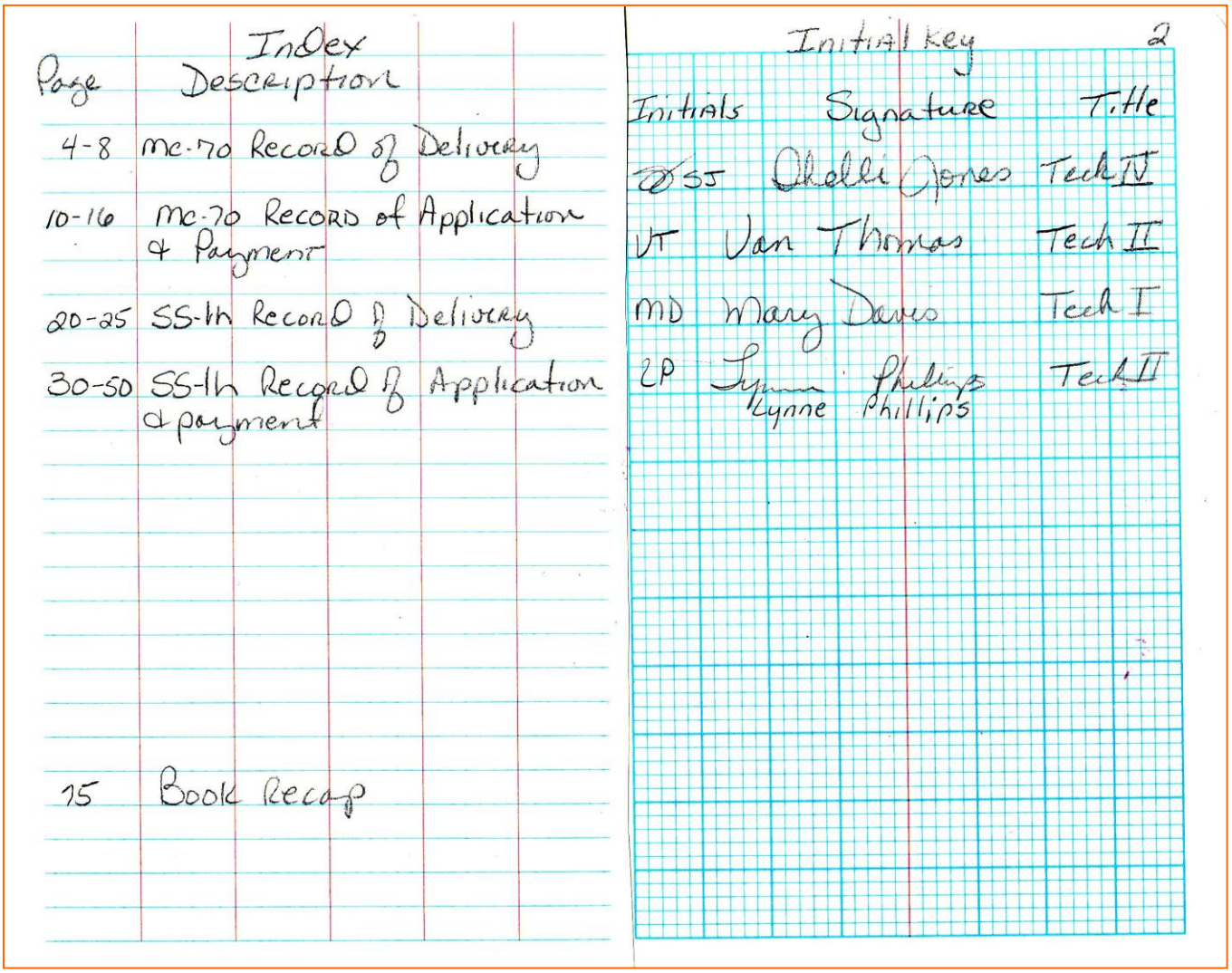
Page 2 - **Index** (left-side of page)

This page shall contain a detailed index of the contents of each book (**including the book recap in the appropriate books on page 75**). When closing out the books make sure there are beginning and ending page numbers for each item listed (including the book recap) if more than one page was used. If room permits skip a line between entries.

Initial Key (right-side of page)

Every person who makes entries in the field book must sign the initial key page (**including the person who made out the book**). If a person initials a book more than one way, both sets of initials must be entered or if your name is changed, you must sign again with your new name and initials. This is merely to identify those persons responsible for making entries in the books. If the signature is not legible, have the person print his/her name under the signature.



Index

Page	Description
4-8	MC-70 Record of Delivery
10-16	MC-70 Record of Application & Payment
20-25	SS-1h Record of Delivery
30-50	SS-1h Record of Application & payment
15	Book Recap

Initial Key 2

Initials	Signature	Title
SJ	Shelli Jones	Tech IV
VT	Van Thomas	Tech II
MD	Mary Davis	Tech I
LP	Lynne Phillips	Tech II

The illustration above is an index and an initial key page for a Liquid Asphalt Book.

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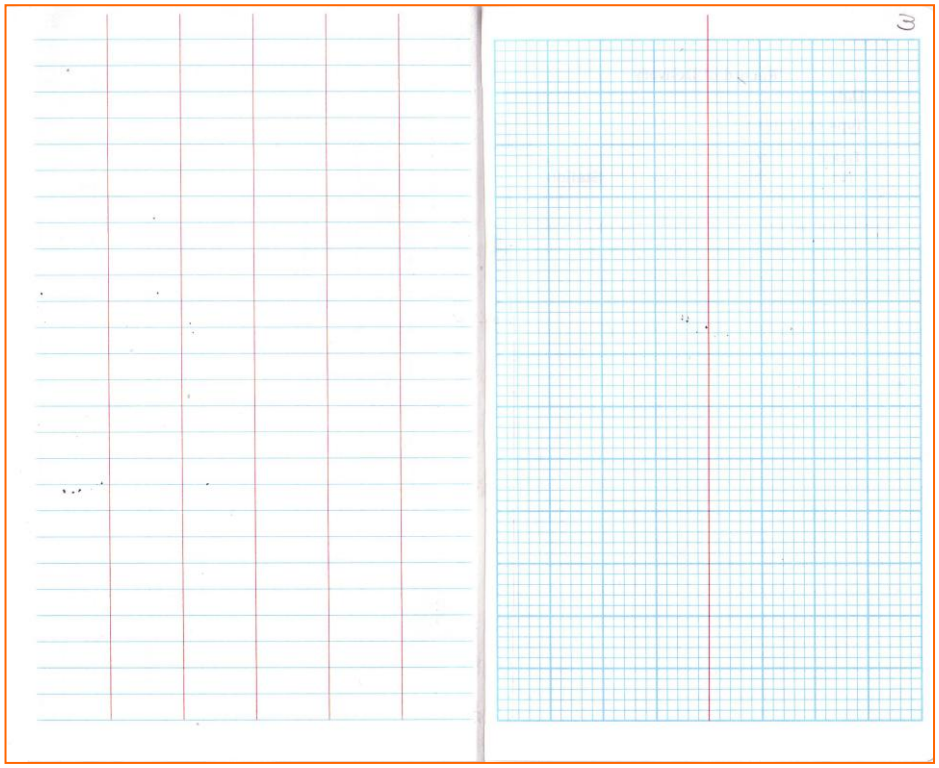
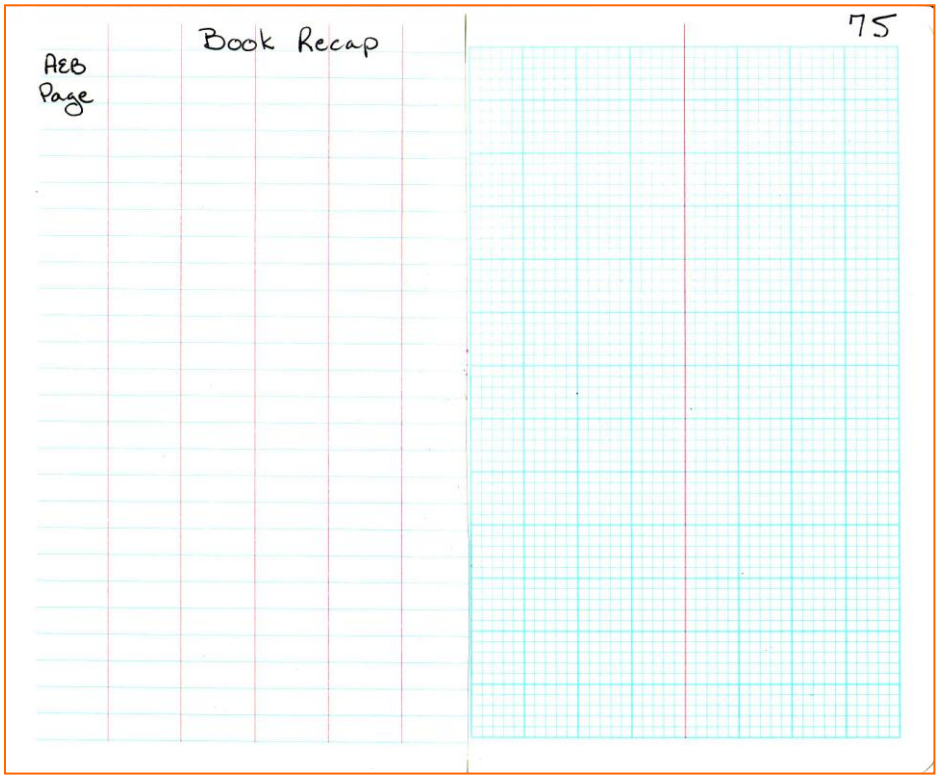
Page 3 - Shall be left blank or can be used for the continuation of the Index. Begin documentation on page 4.



Page 75 - **Book Recap**

When the contract is complete, the page numbers shall be documented down the left side of the page, and item numbers (with change order number for AP0 and PR0) and AEB numbers across the top as illustrated in Chapter 24 ("Finaling Out" a Contract). If more pages are needed to complete the book recap, follow the illustrations in Chapter 24 ("Finaling Out" a Contract). Zero page totals must be recapped.



DOCUMENTATION REQUIREMENT
SECTION C
CALCULATION BOOK
CALCULATION SHEET
(Form No. 040-034)

Calculations made for determining pay quantities (final or estimated) for contract items requiring computations that are too extensive to place in the field book shall be made on a CALCULATION sheet as illustrated on page 2-11 and filed in a loose-leaf binder labeled CALCULATION book. This book shall be kept in the field office.

All calculations and backup shall be placed on a CALCULATION sheet or attached to the back of the CALCULATION sheet and filed in the CALCULATION book. The top portion of the CALCULATION sheet must be completed. **Each page in the CALCULATION book must be numbered consecutively and referenced to the field book(s) and page(s) and the quantities shown in the field books must be referenced to the page in the CALCULATION book where the calculations can be found.**

The CALCULATION book shall be setup in the same manner previously described for the field books but done on an 8½" by 11" white piece of paper.

The Title page will be page number 1 as illustrated on page 2-7.
The Index (excluding the book recap page) will be page number 2 and will follow the illustration on page 2-8.
The Initial Key will be page number 3 and will follow the illustration on page 2-8.
A blank page will be page number 4 and the first CALCULATION sheet will be page number 5.

Each page in the CALCULATION book must have the following information:

Page number
Contract number
Initials of the person responsible for the calculation
Initials of the checker
Date
Description
Location
Reference field book number or the field book title
Page(s) of the field book(s)

The CALCULATION book serves two important purposes:

1. It will reduce congestion in the field books.

2. It will eliminate the necessity of re-copying figures from worksheets into the field books, and thereby decreases the chance of errors in transferring numbers.

Upon completion of a contract, the calculations shall be removed from the three-ring binder by the Headquarters Construction Staff and placed in a file folder, which will be filed in Engineering Files with the other project records.

Forms change periodically, please assure that you are using the most current form available, see Chapter 26 (Distribution of Documents).

STATE OF NEVADA PAGE NO. 11

DEPARTMENT OF TRANSPORTATION

CALCULATION SHEET

CONTRACT NO. 3247 **CALCS BY** JT **CHECKED BY** SP **DATE** 6/3/06

DESCRIPTION Retaining Wall-A Structure Excavation

LOCATION STA. "BD" ~ 48+31.65 to STA. "BD" ~ 45+35.45 206 0500

REFERENCE FIELD BOOK NO. Ret Wall BK1 **PAGE(S)** ~~8~~ 10 FIELD MEASURED

FROM: STA. "48+31.65
TO: STA. "47+89.36

Avg C = (4.61' + 5.02') = 9.63/2 = 4.82'
(42.29')(9') = 380.61 sf
(380.61 sf)(4.82') = 1834.54 cf
1834.54 cf / 27 = 67.95 cy SP

FROM: STA. "BD" ~ 47+89.36
TO: STA. "BD" ~ 47+47.04

Avg C = (5.02' + 5.12') = 10.14/2 = 5.07'
(42.32')(9') = 380.88 sf
380.88 sf (5.07') = 1931.06 cf
1931.06 cf / 27 = 71.52 cy SP

FROM: STA. "BD" ~ 47+47.04
TO: STA. "BD" ~ 47+00.72

Avg C = (5.12' + 5.03') = 10.15/2 = 5.08'
(46.32')(9') = 416.88 sf
416.88 sf (5.08') = 2117.75 cf
2117.75 cf / 27 = 78.44 cy SP

FROM: STA. "BD" ~ 47+00.72
TO: STA. "BD" ~ 46+62.40

Avg C = (5.03' + 4.58') = 9.61/2 = 4.81'
(38.32')(9') = 344.88 sf
(344.88 sf)(4.81') = 1658.87 cf
1658.87 cf / 27 = 61.44 cy SP

FROM: STA. "BD" ~ 46+62.40
TO: STA. "BD" ~ 46+02.08

Avg C = (4.58' + 3.89') = 8.47/2 = 4.24'
(60.32')(9') = 542.88 sf
(542.88 sf)(4.24') = 2301.81
2301.81 cf / 27 = 85.25 cy SP

FROM: STA. "BD" ~ 46+02.08
TO: STA. "BD" ~ 45+77.77

Avg C = (3.89' + 4.31') = 8.15/2 = 4.08'
(24.31')(9') = 218.79 sf
(218.79 sf)(4.08') = 892.66 cf
892.66 cf / 27 = 33.06 cy SP

FROM: STA. "BD" ~ 45+77.77
TO: STA. "BD" ~ 45+35.45

Avg C = (4.31' + 6.13') = 10.44/2 = 5.22'
(42.32')(9') = 380.88 sf
(380.88 sf)(5.22') = 1988.19 cf
1988.19 cf / 27 = 73.64 cy SP

PAGE TOTAL: ~~471.30~~ 446 cy SP

NDOT 040-034 01-98

DOCUMENTATION REQUIREMENT
SECTION D
DAILY DIARIES (Form No. 040-056A)
CONSTRUCTION REPORTS (Form No. 040-056)

For every contract, daily diaries must be kept by the Resident Engineer, Supervisor III, Supervisor I on the survey crew, Hotplant Inspector, Marination Plant Inspector, and Batch Plant Inspector.

There are two versions of the DAILY DIARY REPORT (Form No. 040-056A). Hard copies are available in the Stockroom or the Electronic version in Sharepoint. Follow the distribution instructions at the bottom of each form. For the electronic version, a copy will be printed and signed by the employee and copies will be made and distributed.

The DAILY DIARY REPORT (Form No. 040-056A) will be submitted weekly.

If a **hotplant or marination** plant supplies material for multiple projects for different Resident Engineers, it is up to the **Hotplant and/or Marination Inspector** to find out the contract numbers and record those numbers at the top of each diary page. The original diary shall be sent to the appropriate department for review and a copy kept with the Inspector's contract. Copies shall be made and sent to the other Resident Engineers for the remainder of the projects. This does not relieve any of the other documentation requirements. Follow the distribution instructions on the bottom of the form.

Copies of the diaries shall be filed in Section 1-Contract Files, Division No. 15 as described in Chapter 1 (Organization of Project, etc.).

Construction Inspectors assigned to a particular phase of construction activity are required to prepare a DAILY CONSTRUCTION REPORT. This report shall be completed and submitted to the field office daily and signed by the **Inspector** and reviewed and signed by the Resident Engineer. The original shall be submitted to the appropriate department for review. Follow the distribution instructions on the bottom of the form. The **Inspector** shall retain a copy and a copy shall be filed in Section 1-Division No. 15 as described in Chapter 1 (Organization of a Project, etc.).

If there are any questions concerning the DAILY DIARIES (Form No. 040-056A) or the CONSTRUCTION REPORTS (Form No. 040-056), please contact Headquarters Construction Quality Assurance for assistance.

Forms change periodically, please assure that you are using the most current form available, see Chapter 26 (Distribution of Documents).

DOCUMENTATION REQUIREMENT
SECTION E
SIGNIFICANT FIGURES

The following list of significant figures shall be used for all contract quantities from the beginning of the project thru the final documentation. **Each entry in a field book and on a form must be in accordance with the significant figures.** All field books with pay quantities shall have the significant figure for the appropriate pay item on the top right-hand side on each documented page. If entries are documented using too many places, each entry shall be rounded and adjusted each payment cycle. All accumulative totals shall also be rounded to significant figures.

ENGLISH			METRIC		
gal	1		liter	(L)	1
each	1		each		1
pound	1		kilogram	(kg)	1
ydmi	1		cumkm		1
linft	1		linm		0.1
sqyd	**0.1**	**(calc quantity)**	**sqm**		**0.1**
dollars	0.01		dollars		0.01
station	0.01		station	*	0.1
ton	0.01		mton	**	0.01
sqft	0.01 ⇐	(Signs) ⇒	sqm		0.01
cuyd	1,.1,.01	(plan quantity)	cum		1,.1,.01
cuyd	**0.01**	**(calc quantity)**	**cum**		**0.01**
mile	0.001		kilometer	(km)	0.001
acre	0.001		hectare ***	(hect)	0.001
hour	0.5		hour		0.5
day	0.5		day		0.5
month	0.25, 0.5, 0.75, 1.0		month		0.25, 0.5, 0.75, 1.0
cuft	0.01 ⇐	(concrete) ⇒	cum		0.01
cuyd	0.01 ⇐	(riprap) ⇒	cum		1,.1,.01

(*) metric station = 100 linear meters
(**) metric ton = 1000 kilograms
(***) hectare = 10,000 square meters

ROUND AS FOLLOWS:

3.25 linft	rounds to	3 linft
3.21 linm	rounds to	3.2 linm
3.5 linft	rounds to	4 linft
3.46 linm	rounds to	3.5 linm
1.3278 mi/km	rounds to	1.328 mi/km
1.3273 mi/km	rounds to	1.327 mi/km
4.42 sqyd/sqm	rounds to	4.4 sqyd/sqm
4.47 sqyd/sqm	rounds to	4.5 sqyd/sqm

NOTE: Significant figures in the structure list may be used for guardrail documentation during construction of a contract. When recapping the GUARDRAIL books, final totals shall be rounded to match the significant figures shown above.

Contact Headquarters Construction if a different significant figure is required on an item.

For example: An Each item's significant figure is 1. If the Resident Engineer does not want to pay for the entire item in one entry or the Contractor wants part of his money because the item has been partially installed, then a new significant figure may be request.

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DOCUMENTATION REQUIREMENT
SECTION F
METRIC CONVERSION FACTORS

The following list of metric conversion factors (refer to Standard Specifications for Road and Bridge Construction (Silver book) page 570) shall be used for all quantity conversions for daily calculations:

QUANTITY	FROM ENGLISH	TO METRIC	MULT QUANTITY BY
Length	inch	mm	25.4
	ft	mm	304.8
	ft	m	0.3048
	yd	m	0.9144
	mile	km	1.609344
	mile	m	1609.344
	in/mi	mm/km	15.7828
Area	sqin	sqmm	645.16
	sqft	sqm	0.092903
	sqyd	sqm	0.836127
	acre	sqm	4046.873
	acre	hect	0.404687
	sqmi	sqkm	2.59
Volume	cuin	cumm	16387.06
	cuft	cum	0.0283168
	cuyd	cum	0.764555
	gallon	L	3.78541
	gal/yd	L/m	4.1398
	gal/sqyd	L/sqm	4.5273
	gal/cuyd	L/cum	4.9511
	gal/acre	L/hect	9.3539
	gal/ton	L/t	4.1727
Mass	ounces	g	28.349523
	pound	kg	0.453592
	kip (1,000 lbs.)	t	0.453592
	ton	t	0.907185
Force	pound	N	4.44822
	kip	kN	4.44822
Force/ Unit Length	lb/ft	N/m	14.5939
	lb/in	N/mm	0.175127
Pressure, Stress	lbs/sqft	Pa	47.8803
	kips/sqft	kPa	47.8803
	lbs/sqin	kPa	6.89476
	lbs/sqin	MPa	0.006895
	kips/sqin	MPa	6.89476

QUANTITY	FROM ENGLISH	TO METRIC	MULT QUANTITY BY
Energy	foot pound	J	1.35582
Mass/ Length	ounces/sqyd	kg/sqm	0.0339057
	lbs/sqft	kg/sqm	4.8824
	lbs/sqyd	kg/sqm	0.54249
	lbs/cuft	kg/cum	16.01846
	lbs/cuft	Mg/cum	0.01601846
	lbs/cuyd	kg/cum	0.593276
	lbs/acre	kg/hect	1.1208
	tons/acre	t/hect	2.2417
Temperature	°F	°C	(°F-32)/1.8

DOCUMENTATION REQUIREMENT
SECTION G
STANDARD SPECIFICATIONS – METHOD OF MEASUREMENT AND PAYMENT

The following is a list of the correct method of measurement and payment that shall be used on all contracts. If there are any questions concerning an item that is not shown in the following list, please call Headquarters Construction for assistance.

Unit	Sig fig	Requirements	Remarks
Each	1	counted	
Linft	1	field meas	
Sqft	.01	field meas & calcs	If taking quantities from the Standard Plans for marking film or sign quantities from the Contract Plans, plan qty may be paid. Otherwise, calculations are required or in the Remarks column, state where the dimensions were found. If signs are added, an explanation is required in the Remarks column.
Sqyd Cuft	.1 .01	field meas & calcs field meas & calcs	If an area is too difficult to calculate, please call Headquarters Construction for assistance.
Cuyd	.01	plan qty or field meas & calcs if different than plan qty	**Cannot pay plan on removal items, RipRap items, or items being weighed. Removal items must be measured before removed.**
Acre	.001	field meas & calcs	
Station	.01	field meas & calcs	
Mile	.001	field meas & calcs	
Ton	.01	weighed over scales	Scale sheets, delivery tickets, load books & spreadsheets, or field meas & calcs
Gallon	1	field meas & calcs	Must take a picture of the container label and place on a CALCULATION sheet and place in the CALCULATION book for backup
Pound	1	plan qty or field meas & calcs if different than plan qty	If an item is delivered in a container or sack, a picture of the container label must be taken and placed on a CALCULATION sheet and placed in the CALCULATION book for backup

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DOCUMENTATION REQUIREMENT
SECTION H
PHOTO IDENTIFICATION GUIDE LINES

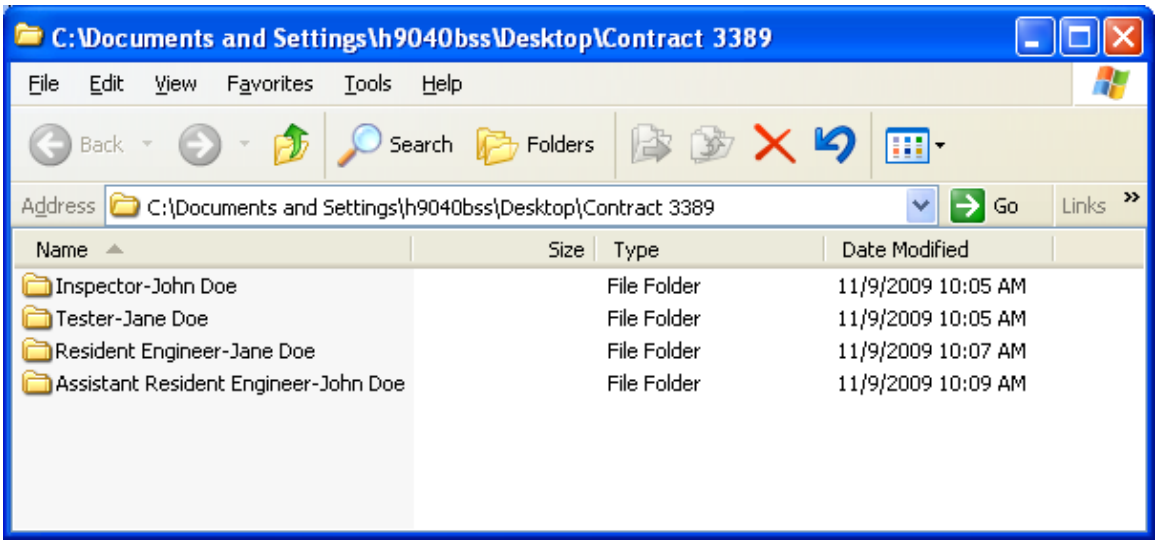
Basic Guidelines

1. Make sure the time and dates are correct in the camera's Daylight Saving Time on each camera

2. If storage Disk Space on the computer becomes an issue, then limit the Photo size to 1MB

3. On a computer that is accessible to everyone on the crew. Create a new folder and label it with the contract number. Within the newly created folder, create additional folders, one for each inspector and tester and for anyone who will be taking pictures for documentation.

4. The camera's software will automatically assign a name with both a date and time. DO NOT change the given file name of the photo



5. Copy all photos/files to a CD before the final job pickup that will become part of the Contract Documents.

6. Provide a detailed description of each picture listed on the CD utilizing the digital file name of the photo.