Construction Documentation
Breakout Session #1 & #5

September 19, 2018 (11:00 – 12:30)
September 20, 2018 (10:30 – 12:00)
Russ Dudley, Moderator
VDOT Local Assistance Division
Construction Documentation

Robert Ridgell
District ACE
Fredericksburg - VDOT

DJ Kelly
District ACE
Fredericksburg - VDOT
Overview

• Start Right
  • Building a Sound Contract
  • Construction Engineering and Inspection
  • QA/QC Plan
  • Materials Notebook
  • Environmental Documentation
  • Award and Initial Submittals
Overview

• Stay Right
  • Daily Diaries
  • Work Zone Inspections
  • Materials Documentation and Test Reports
  • Erosion and Sediment Control
  • Project Schedule and Look Aheads
  • Environmental
  • Construction Change (Work Order) Documents
  • Contract Remedies

• BONUS - Construction Photography
Making a Solid Contract

• General Conditions (which prevails)
  – Locality
  – VDOT
  – Project Specific (Supplementary Specs)

• Document Hierarchy

• Testing and Other Procured Services
  – Who has the general responsibilities for testing?
  – How about video inspections of pipes?
  – Inspection Access?
  – Do specific specifications conflict (i.e. Contractor provides Special Inspections)

• Procurement Specific Details
  – Design/Build
  – Differing Site Conditions
  – Investigations, Errors, Claims

Start Right
Preparing a Plan for CEI

- Responsible Person In-Charge vs. Responsible Charge Engineer
- Perform an in-house assessment of capabilities of your staff
  - Daily Observations and Construction Management
  - Submittal Reviews
  - Evaluation of Field Changes and Work Orders
  - Schedule Review and Impact Analysis
  - Verification of quantities and standard practices
  - Provide a Responsible Charge Engineer
- Use requirements detailed in Chapter 13 of the LAP Manual as part of your assessment
- Communicate with your local VDOT Liaison for review and concurrence on your CEI plan
Construction Engineering and Inspection Considerations

• Self-Perform vs. Consultant
  • In House
  • Staff Augmentation
  • Turn-Key Consultants
  • Considerations
    • Funding Source Federal vs. State vs. Revenue Sharing, Etc....

• Consultant Procurement Considerations
  • Design
  • Construction Engineering Inspection

• Scope & Fee

• Construction Management vs. Testing Services
Consultant Considerations

• In my former life as a non-VDOT consultant, we often weren’t aware of the difference in the scope we provided vs. the scope that was expected. Why?
  • Procurement documents were unclear
  • Project manuals did not refer to acceptance specifications
  • Project manuals conflicted on testing to be provided by the owner or the contractor
  • Most consultants do not have experience with VDOT project management requirements and are used to only providing construction testing
Consultant Procurement Considerations

Typical Construction Testing Scope

The remainder of what you need for reimbursement!!!
Drafting CEI RFP

• Owner must:
  • Define Scope of Service – breadth, depth, detail.
  • Delineate roles and responsibilities of all parties.
  • Emphasize significant prior LAP / UCI experience.

• Choices to be made:
  • Full service (PE/RW/CN) contract or CEI only.
  • Lump Sum / Fixed Fee or Hourly.
  • Mandatory Staffing of Critical (specified) roles.
  • Penalty clause for turn-over of critical roles.
  • Who provides documentation software?
    • This is a project eligible expense
Quality Assurance Plan

- Quality Control (QC)
  - Acceptance Test (AT)

- Quality Assurance (QA)
  - Independent Assurance (IA)
  - Verification Sampling and Testing (VST)

- Third Party or Other Testing (e.g. VDOT)

Fabricated Item Inspections

Start Right
QA Plan

• Main Components of the QA Plan
  ➢ Cover Sheet - ("Responsible Charge Person", "Contact Person", Organizational Chart, etc.)

I. Mission Statement
   • Predefined commitment to follow VDOT specifications (as applicable to project), standards and LAP Manual

II. Personnel Certifications
   • ACI, VDOT Plant, Field, Nuclear Safety

III. Lab Accreditation – IA Procedure
   • AMRL, CCRL
   • Referee procedure for IA out of tolerance
     – Equipment checks, third party testing

Start Right
QA Plan

Main Components of the QAP

IV. Communication Channels

• Establish communication channels to provide direction and solve problems. Show who the Responsible Charge person is and who is the Responsible Charge Engineer.

• Resolution procedure should be described, along with how to proceed if an agreement is not reached after initial discussion.

<table>
<thead>
<tr>
<th>Localities Responsible Person - PE not required.</th>
<th>VDOT LAP Reviewer</th>
<th>Designer of Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsible Charge Engineer if not Locality - PE required.</td>
<td>Localities Inspection Staff - could be Consultant</td>
<td>Contractor</td>
</tr>
</tbody>
</table>

Start Right
QA Plan

V. Materials Acceptance and Test Data records

- Materials Records, test data, project notebook, file

VI. All materials testing, testing methods and frequencies shall follow LAP Manual.

- Predefined deviations for the testing and inspection frequencies

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Spec Section</th>
<th>Test Reference</th>
<th>Acceptance Testing</th>
<th>VST</th>
<th>IA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cast-In-Place Structures and Bridge Concrete</td>
<td>VDOT Section 217</td>
<td></td>
<td>Test every load, except for bridge decks, in which case one test per truck-load for the first 3 trucks and then one test for every third truckload thereafter; provided results remain within 1.0% of median of design range. Test also required when making compressive specimens.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Entrained Air Content (CIP Concrete)</td>
<td>217.68</td>
<td>ASTM C63 to C173</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stamp of Hydraulic Cement Concrete (CIP Concrete)</td>
<td>217.68</td>
<td>ASTM 143</td>
<td>Test every load and when making compressive specimens.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature of Concrete (CIP Concrete)</td>
<td>217.11</td>
<td>ASTM C192</td>
<td>Test every load and when making compressive specimens.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
VII. VDOT Inspections

Hold Points for VDOT Maintained Roadways & Structures  
- Hold Point vs. Witness Point

Must Notify VDOT to inspect, and work will not proceed without VDOT

Examples:
• Principal Spillway for SWM Pond
• MSE Wall
• Bridge Deck Placement
• Final Subgrade
• Final Acceptance
QA Plan

Non-Conformance Report and Recovery Plan:

- **Non Conformance Report (NCR)**

“A project without a single Non-Conformance report is not perfect, it’s usually fishy.....”
QA Plan

• Auditing and Nonconformance Recovery Plan (AR Plan)
Materials Notebook

VDOT Urban Manual, Section 3.9.2: Locally Administered Projects

“When a municipality administers a VDOT-funded project, the municipality must adhere to those processes and procedures outlined in VDOT’s Locally Administered Projects (LAP) Manual.”

LAP Manual, Section 13.2.6 covers use of Materials Notebooks.
Materials Notebook

- Material Notebook Template can be found at VDOT website:

  301.) TL-142
  - Materials Notebook
    (776704 bytes)

  302.) TL-142DB/LAP
  - Materials Notebook - DB/LAP
    Materials Notebook for Design Build and Locally Administered Projects
    (1012018 bytes)

  303.) TL-142S
  - Sample Materials Notebook
    (770048 bytes)

- TL-142 is the typical VDOT material notebook
- TL-142 DB/LAP is new but has places for testing tracking for QC, QA, and IA
- TL-142S provides a sample notebook completed to use as a reference
13.1.5.6 Project Reimbursement Requests
The LPA must submit a certification along with each monthly payment voucher to the CPM.

- All iron and steel fabricated materials used on the project during the pay period meet Buy America (23 CFR 635.410) as applicable to federal aid projects.
Initial Submittals

- Personnel List
- Emergency Contacts
- Equipment List
- Personnel Certifications
  - Consultants
    - Materials Certifications
    - Lab Accreditations
  - Contractors
  - Flaggers
  - Welders
  - Specialty Certifications (Shotcrete, Proprietary Systems, etc.)
Environmental Permits

- **VPDES General Permit**
- Stormwater Pollution Prevention Plan (SWPPP)
- Pollution Prevention Plan (P2 Plan)
- NEPA Footprint
- DEQ Water Quality Permit
- Army Corps Permits?
Other Permits

- VDOT Land Use Permit
- Building Permits (Particularly Applicable to TAP Projects)
- Special Inspections (ICC Requirements for Occupied Struct.)
- Municipal 3rd Party Inspections

"OK, LET'S SEE YOUR BUILDING PERMIT"
Requirements for Daily Observation and Documentation

- Consider full time observations vs. daily “check-ins”
- Trying to save money on inspections can lead to much greater costs to fix things later down the road
- Inspection staff must visit the site regularly to document and verify activities
- Lack of sufficient documentation during construction activities can lead to refusal of reimbursement from VDOT and/or FHWA
- In the case of changed or additional work, full-time observation is usually crucial to verify final quantities
- Consider flexibility with system and submission, eDocumentation means faster delivery and easy searching.
Daily Diary Requirements

- Date
- Weather
- Contractor’s Equipment
- Contractor’s Staff
- Work Items & Location
- Materials Delivered
- Pay Items/Quantity of Work
- All Communications
- Safety
- Damage
- Visitors to the Job Site
- Delays (any and all)
- Change Conditions
- But Wait... There's More! - Diary Attachments

Network for Success
Local Programs Workshop
VDOT Virginia Department of Transportation

Stay Right
# Materials Documentation

**C-25 for Entry into Materials Notebook**

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**VIRGINIA DEPARTMENT OF TRANSPORTATION**

**SOURCE OF MATERIALS**

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<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>SPEC. NO.</th>
<th>ITEM DESCRIPTION</th>
<th>MANUFACTURER and/or SUPPLIER</th>
<th>COMPLETE ADDRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>67908</td>
<td>ATTD</td>
<td>REBAR</td>
<td>Whillock Brothers, Inc</td>
<td>5588 Raby Road</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Norfolk, VA 23502</td>
</tr>
<tr>
<td>67908</td>
<td>ATTD</td>
<td>REBAR</td>
<td>Piedmont Fabrications, LLC</td>
<td>1320 Yacht Drive</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Chesapeake, VA 23320</td>
</tr>
</tbody>
</table>

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**SUBMITTED** MAR. 1, 2013

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**PRIME CONTRACTOR with ADDRESS**

**SDC CONTRACTING, LLC**

1452 TAYLOR FARM ROAD #106

VIRGINIA BEACH, VA 23454

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**SUBJECT TO INSP/TEST BY**

**VDOT QA SUPPLIER PROGRAM** (WITH MFG CERT & MOINTOR SAMPLE ON PROJECT)

**NAME and TELEPHONE NO. of CONTACT PERSON**

**DAVID WILLIAMS**

757-689-3665

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**PROJECT NUMBER** (INFO)0017-965-041.N501

**PROJECT LOCATION** RT 17 JRB

**DISTRICT** HAMPTON ROADS

**COUNTY** ISLE OF WIGHT/Newport News

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**CONTRACT ID. NO.** C00094882N01

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**Form C-25**

Rev. 7-18-06

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Stay Right
Materials Documentation

WE CERTIFY THAT THE MATERIALS ARE IN ACCORDANCE WITH VDOT's MATERIALS QUALITY ASSURANCE PROGRAM.

Casey Wignall
Quality Assurance Program

DELIVERY TICKET

BILL OF LADING

STAY RIGHT
Materials Documentation

• Package the delivery tickets with the Bill of Lading and the Mill Certs (make sure they are all for the same material) and place in folder for record retention.

• Once it is confirmed that the quantity of Rebar delivered matches up with the supporting documentation, make sure it also matches the material quantities in the contract.
Testing Documentation

Delivery Tickets
Asphalt
Concrete
Borrow Soil
Rebar
Etc....

Needed for backup of associated summary TL forms.
Asphalt Paving Testing Documentation

Top Portion of TL-102 is filled out by Weigh Master at Plant. This cannot be changed by anyone but the Weigh Master.

Bottom Portion is filled out by Inspector to show material delivered, material not used, and total material placed for that shift. Delivery tickets and TL-102 should be in agreement.
**Construction Runoff Control Inspections**

**CONSTRUCTION RUNOFF CONTROL INSPECTION FORM (CRCIF)**

<table>
<thead>
<tr>
<th>C-107 CONTRACTOR INSPECTION SHEET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name/ID</td>
</tr>
<tr>
<td>Contractor</td>
</tr>
<tr>
<td>Inspection Date</td>
</tr>
</tbody>
</table>

**Type of Inspection:** (Check Appropriate Block)

1. Schedule 1: (5 Business Days and within 48 hours following a measurable storm event) □
2. Schedule 2: (Monday and Thursday, 4 Business Days) □
3. Monthly Schedule □
4. Other Describe: ______

**Weather Conditions (At Time of Inspection) (Check All Appropriate)**

- Clear □
- Sunny □
- Partly Cloudy □
- Cloudy □
- Cold □
- Cool □
- Mild □
- Hot □

If there is any discharge occurring from construction site at time of inspection?

Yes □ No □

If yes, is discharge compliant with the Erosion and Sediment Control Regulation and VPDES Construction Permit Requirements?

Yes □ No □

If no, describe conditions of discharge:

<table>
<thead>
<tr>
<th>ITEM #</th>
<th>ESC INSPECTION QUESTIONS</th>
<th>N/A 1</th>
<th>YES 2</th>
<th>NO 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Have stabilization activities been initiated on all disturbed areas that have reached final grade or that will remain dormant for more than 14 days?</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>2</td>
<td>Have stabilization activities been completed within 7 days of initiation?</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>3</td>
<td>Have disposal/borrow and soil stockpiles areas been stabilized and/or protected with sediment trapping measures?</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

---

I certify under penalty of law that I have read and understand this document and that this document and all attachments were prepared in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

<table>
<thead>
<tr>
<th>Certified CONTRACTOR: See Note 2 on Sheet 4</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Signature</td>
<td>ESCCC Certification Number</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Certified Inspector: See Note 3 on Sheet 4</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Signature</td>
<td>DEQ Certification Number</td>
</tr>
</tbody>
</table>

Provide copies to 1) the Contractor, 2) the VDOT Project Records.
Construction Runoff Control Inspections

CONSTRUCTION RUNOFF CONTROL INSPECTION FORM (CRCIF)
C-107 VDOT INSPECTION SHEET

Project Name/ID: ________________________  UPC: ________________________
Contractor: ________________________
Inspection Date: (See Note 5 on Sheet 2) ________________________

<table>
<thead>
<tr>
<th>ITEM #</th>
<th>INSPECTION QUESTIONS</th>
<th>N/A</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Is a copy of the VDES Construction Permit coverage letter in the SWPPP?*</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2</td>
<td>Is a copy of the VDES General Permit For Discharges Of Stormwater From Construction Activities contained in the SWPPP?*</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3</td>
<td>Are copies of the LD-445 and LD-445E items contained in the SWPPP?*</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4</td>
<td>Is a copy of the LD-446A form completed and posted in accordance with the SWPPP General Information Sheet requirements?*</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5</td>
<td>Are all E4C and P2 inspections being performed, recorded and documented in accordance with the specifications?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6</td>
<td>Are corrective actions being identified, performed and documented in accordance with the specifications?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>7</td>
<td>Have enforcement actions been taken?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>8</td>
<td>If answers yes to #7, has documentation of enforcement actions been included in the SWPPP?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ITEM #</th>
<th>STATION</th>
<th>DESCRIPTION OF PROBLEM, LOCATION, AND RECOMMENDED CORRECTIVE ACTION (NOTE 4)</th>
<th>DATE TO BE CORRECTED BY</th>
<th>DATE CORRECTIVE ACTION COMPLETED</th>
</tr>
</thead>
</table>

I certify under penalty of law that I have read and understand this document and that this document and all attachments were prepared in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of jail time and imprisonment for knowing violations.

VDOT ACE: Spec Note 2

<table>
<thead>
<tr>
<th>Name</th>
<th>Signature</th>
<th>DEQ Certification (Number(s))</th>
<th>Date</th>
</tr>
</thead>
</table>

Provide copies to 1) the Contractor, 2) the VDOT Project Engineer (See Note 2 on Sheet 2).
Project Schedule and Look Aheads

- **Good**
  - 2 Week Look-Aheads
  - Narrative Work Plans

- **Better**
  - Bar Chart Schedules

- **Best**
  - Critical Path Schedule
  - Cost-Loaded Critical Path Schedule
  - Cost and Resource-Loaded Critical Path Schedule

**Best Practice:**
Without a Critical Path Schedule it can be very difficult to properly account for delays and impacts.

Consider using a Critical Path Schedule for projects that the potential for differing conditions, owner directed changes, or significant deadlines.
Environmental Commitments

- Hazardous Materials
- Historic Resources
- Recreational Users
- Pedestrians
- Endangered Wildlife
- Reservations
- Wetlands
- Streams

**Best Practice**
Request Environmental Commitment documentation and outline from VDOT Liaison at the start of Construction to be aware of these items.

**Lesson Learned**
Project for creation of large commuter parking lot for rail commuters. Following start of earthwork a large stockpile of potentially petroleum contaminated soil was unaccounted for. Materials were identified as a “potential” concern in a previous Phase 1 ESA of the site. Subsequent investigation indicated it wasn’t a concern. Jeopardized project reimbursement.
Construction Change Documents

• 3 Types of Changes
  – Bilateral
  – Unilateral
  – Force Account

• Bilateral
  – Agreement is agreed to and fully executed by both parties (i.e. the Contractor and the Owner)
  – Include language describing that all parties waive rights to claim for additional time or compensation for scope of work described within.
Construction Change Documents

• **Unilateral**
  – Owner and Contractor do not agree on price or terms
  – Owner directs Contractor to perform scope at a price and terms set by owner.
  – Contractor may seek additional compensation and time via claims process.
    • Note that a timely Notice of Intent to File Claim must be provided as required by the Code of Virginia. Timeliness is measured to the time of occurrence which can be the discovery of the condition, the time of the unilateral directive to complete work, or a rejection of Contractor’s request for additional time or compensation.

Best Practices
• Understand your claims process
• Carefully review all terms in unilateral
• Do not issue a unilateral to attempt to resolve a claim!
Construction Change Documents

• Force Account
  – AKA Time and Materials
  – Only appropriate for issues that can’t be quantified
    • Examples:
      – Rock excavation not anticipated or delineated by subsurface exploration
      – Buried hazardous materials such as petroleum contamination
  – Avoid them, administrative oversight required is intensive
    • 15 minute accounting of labor, materials, active equipment, and idle equipment
    • Daily reconciliation
    • Full time observation
  – Very easy to get out of hand without proper monitoring
    • Unneeded equipment and manpower on-site
Construction Change Documents

• Process Recently Revised
  – You do not have to use VDOT forms; however, the evaluation process utilized should mirror VDOT’s. Use of C-10 and C-10A can make this easier.

• Step 1: Concept Approval or Establishment of Entitlement (Form C-10A)
  • Review Contract Documents including references to ensure that the changed condition is not to be included in the base scope of the project.
  • Example: Payment for additional stone to place concrete barrier on a level surface. Site preparation is included in the measurement and payment for barrier service. No entitlement, enforce contract.
  • If state or federal funding, send concept

• Step 2: Complete and Independent Government Estimate (IGE)
  – Review available pricing data
    » VDOT District Bid Averages (use nearby similar projects)
    » RS Means
    » Labor Rates, Materials Quotes, and Blue Book Equipment

• Step 3: Receive Contractor Pricing and Compare to IGE
  – Generally Contractor’s pricing is acceptable if within 10% of IGE
  – If pricing not within 10%, negotiate the change, document all justifications and scope reconciliations to get to agreement.
  – If negotiation fails, but work must be done proceed with unilateral, minding best practices.

• Step 4: Prepare final change documentation (Form C-10)
  – Send first to Contractor, then execute internally, do not allow Contractor to markup unless mutually agreed to.
  – If state or federal funding, receive approval from VDOT.
• That, Ladies and Gentlemen, is how you run and document a Construction Project...
Construction Photography

• Additional documentation
• Photos show a snapshot in time
  • Can assist in remembering what happened on the project site
  • Advantage and disadvantage: can be used in a claim
Construction Photography

• **Helpful Tips**
  • Take photos of the project site PRIOR to construction to compare to during construction
  • Pay attention to lighting
  • Make sure camera/phone is in focus
  • Consider framing and background (wide angle vs. close up)
  • Add comments to the photos
  • Generally, do not take photos from the truck
  • Review photos before saving them to the project files
Rt616 processed millings driveway entrance transition. Worked well for this application.
Stay Right
Item #2

Location: SW Corner at Intersection of Princess Anne Street & Bridgewater Street

Issue: Will reobserve following a normal rain event; possible grinding to lead water to nearby drop inlet.
Construction Photography

- It is considered good practice to upload photos to the project files **at least once a week**
  - Review the uploaded photos in the project files
  - Rotate photos horizontally or vertically, as needed
  - Consider sketching or drawing on photos
  - Add comments to the photo
    - An easy way to do this is by adding comments in a Word document, then saving the final version as a PDF
    - If you are adding comments on the photo, remember to also save the original photo
QUESTIONS?

Discussion