



Project Start-Up

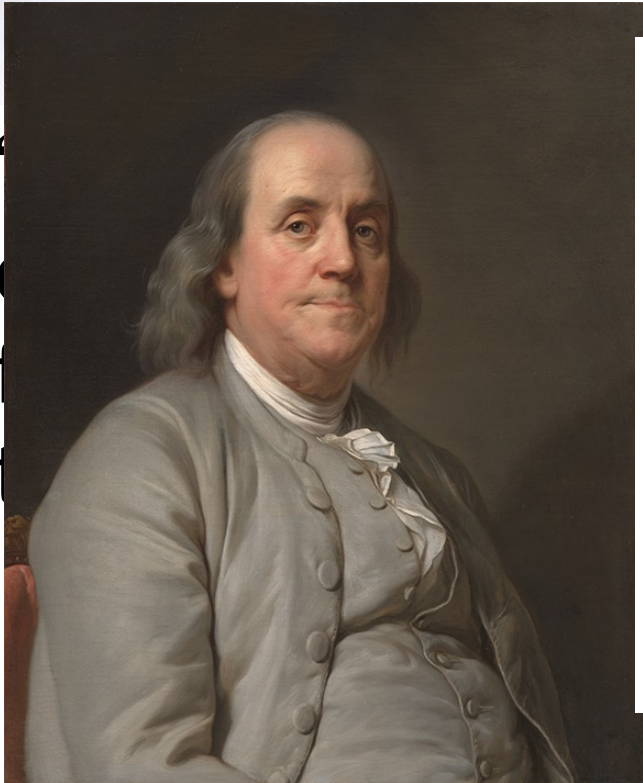
Foreman's Development Series

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Objectives

- To become familiar with the documents, terms, methods and procedures that are necessary in a new project “start up”.
- To help ensure the greatest chance of a successful project - by starting the project out right.

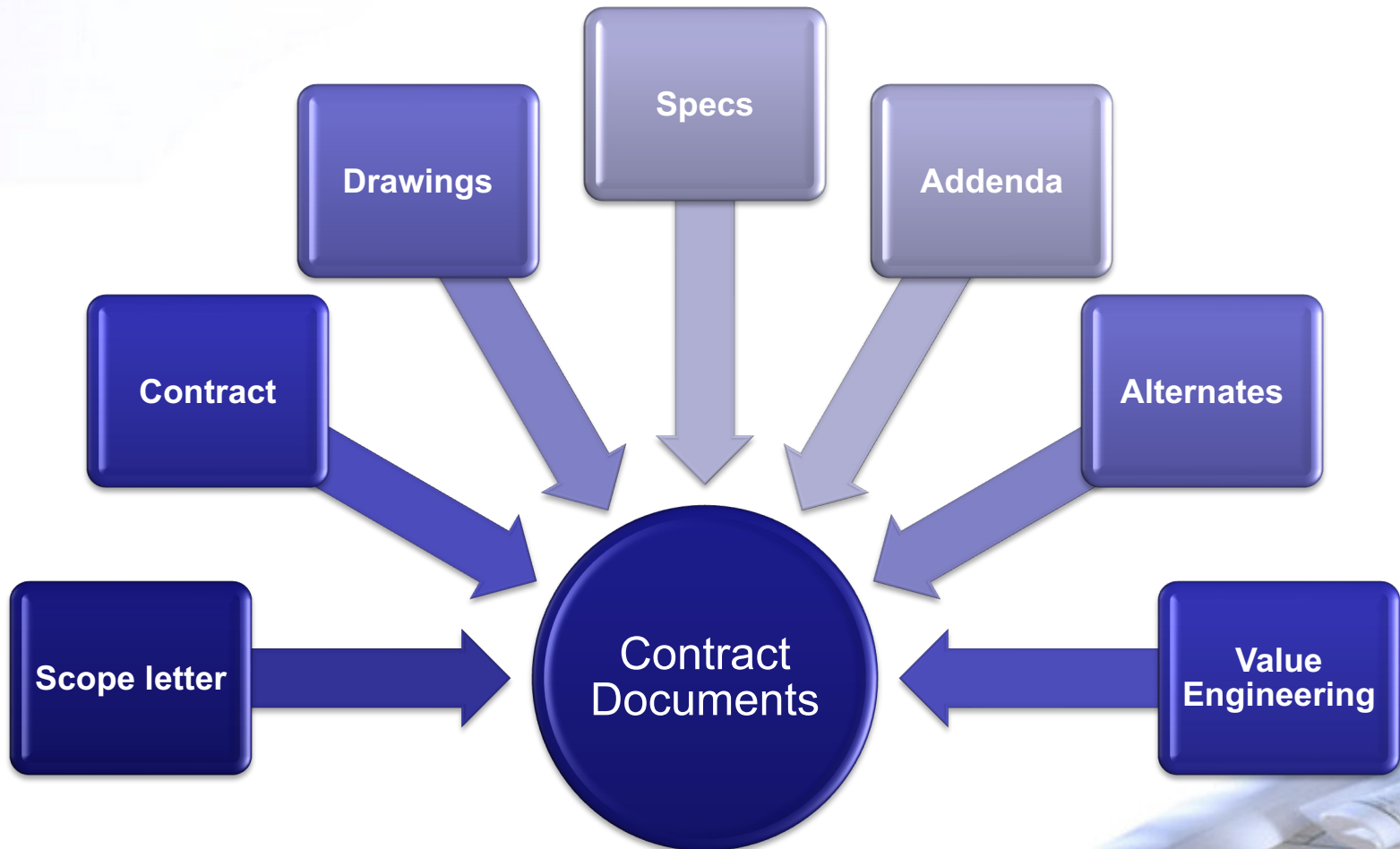
Quote



“The problem with internet quotes, is you never know if they are true.....” - Ben Franklin

Abraham Lincoln

Contract Documents



Scope Letter

May cover all or some of the following:

- Clarification of work scope
- Equipment and/or services included
- Exclusions
- Price



Project: **Galaxy Independent School District**
Athletic Additions

Engineer: Joshua Ward, Consulting Engineers, LP

Addenda: 1 and 2

We are pleased to provide the following proposal for your review. Sweet Heart Electric proposes to furnish labor and materials for a complete electrical installation in accordance with the project plans and specifications as follows:

Included in the Base Bid Cost:

- Per Plans and Specifications dated 7-21-08 with the following sheets: E1.1, E1.2, E2.1, E2.2, E3.1, E4.1 and E5.1.
- Fixtures furnished and installed
- Switchgear furnished and installed
- MUSCO Lighting furnished and installed

Excluded from the Base Bid Cost (if Applicable):

- Bond Fees (bondable at a value rate)
- Utility Fees
- Temporary Power
- VFD Equipment
- Taxes
- Permits
- Fire Alarm
- Voice and Data Cabling
- Security and Sound
- Asphalt or Concrete Cut or Patch
- Temporary Generators or Hook Up of Sub's Trailers
- Control Conduit and Wiring
- Excavation for Sport Lighting Poles
- Site Lay Out
- Fire Stop or Sound Caulking
- Formed Concrete
- 3rd Party Testing
- Commissioning

Sweet Heart Electric will install, terminate and start up the above equipment. All specified submittals, wiring diagrams, as-builts and O&M Manuals are included. Sweet Heart Electric backs the entire installation with our standard one-year warranty. This proposal is only valid upon execution of a mutually agreeable subcontract. This proposal will become part of the subcontract. Three (3) sets of contract documents will be provided to Sweet Heart Electric at no cost.

PRICING:

Bid Package #1.....\$ 27,850.00
Electrical

Bid Package #2.....\$120,750.00

VE OPTIONS:

Item #8 Occupancy Sensors.....<\$ 1,000.00>

Use Copper in Lieu of Aluminum #1 Larger.....<\$ 1,100.00>

Parking Area Breakout "cannot be cherry picked"\$ 4,600.00

If you have any questions regarding this proposal please contact me at (555) 212-8791.

Sincerely,
Sweet Heart Electric Ltd.

John Price
Estimating Department

Contract

- 1) Binding Agreement – Enforceable by law
- 2) Know what your employer has agreed to
- 3) Conditions of the Contract
 - General....Common to all types of contracts
 - Special.....Relevant to specific contracts
 - Supplemental....Additional conditions

SHORT FORM STANDARD SUBCONTRACT

This Agreement is made this 29th day of **September, 2008**, between **Consulting Engineers, LLP** (Contractor) and **Sweet Heart Electric** (Subcontractor). The work described in Section 1 below shall be performed in accordance with the prime contract between Contractor and **Galaxy Independent School District** (Owner) and in accordance with all plans, specifications and other contract documents attached to or incorporated into the prime contract for the **project known as Galaxy Independent School District – Athletic Additions**. The Construction Lender (if applicable) is: **N/A**

SECTION 1. SCOPE Subcontractor agrees to furnish all labor, materials, equipment and other facilities required to complete the following work:

Furnish labor and materials for a complete electrical installation in accordance with the project plans and specifications per Sweet Heart Electric Proposal Letter dated September 11th, 2008.

SECTION 2. PRICE AND PAYMENT. Contractor agrees to pay Subcontractor for the strict performance of his work **the sum of One hundred forty-seven thousand six hundred dollars (\$147,600.00)**, or as set out in Section 15 below, subject to adjustments for changes in the work as may be directed in writing by Contractor.

Payment shall be made in monthly progress payments of 100 percent (100%) of labor and material which have been incorporated into the work of improvement; progress payments to Subcontractor shall be made only with sums received by Contractor from Owner for work performed by Subcontractor as reflected in Contractor's applications for payment. Final payment of the balance owed to Subcontractor shall be due ten days after receipt by Contractor of final payment from Owner for Subcontractor's work. Subcontractor agrees to furnish, if and when required by Contractor, payroll affidavits, receipts, vouchers, releases of claims for labor, and material, and agrees to furnish same from its subcontractors, suppliers and/or materialmen in form satisfactory to Contractor, prior to receipt of any payment. Contractor may, at its option, make any payment or portion thereof by joint check payable to Subcontractor and any of its subcontractors, suppliers and/or materialmen.

If owner or other responsible party delays making payment to Contractor from which payment to Subcontractor is to be made, Contractor and its sureties shall have a reasonable time to make payment to Subcontractor. "Reasonable time" shall be determined according to the relevant circumstances, but in no event shall be less than the time Contractor, Contractor's sureties, and Subcontractor require to pursue to conclusion their legal remedies against Owner or other responsible party to obtain payment, including (but not limited to) mechanics' lien remedies.

If the Subcontractor asserts a claim which involves, in whole or in part, acts or omissions which are the responsibility of the Owner or another party, including but not limited to claims for failure to pay, an extension of time, delay damages, or extra work, Contractor will present the Subcontractor's claim to the Owner or other responsible party. The Subcontractor shall cooperate fully with the Contractor in all steps taken in connection with prosecuting such a claim and shall hold harmless and reimburse the Contractor for all expense, including legal expense, incurred by Contractor which arise out of Contractor's submission of Subcontractor's claim to Owner or other responsible party. Subcontractor shall be bound by any adjudication or award in any action or proceeding resolving such a claim.

SECTION 3. ENTIRE AGREEMENT. This Agreement represents the entire agreement between Contractor and the Subcontractor and supersedes any prior written or oral representations. Subcontractor, its subcontractors, suppliers and/or materialmen are bound by the prime contract and any contract documents incorporated therein insofar as they relate in any way, directly or indirectly, to the work covered by this Agreement.

SECTION 4. TIME. Time is of the essence of this Agreement. Subcontractor shall provide Contractor with scheduling information in a form acceptable to Contractor and shall conform to Contractor's progress schedules, including any changes made by Contractor in the scheduling of work. Subcontractor shall coordinate its work with that of all other contractors, subcontractors, suppliers and/or materialmen so as not to delay or damage their performance.

SECTION 5. DELAY. In the event that Subcontractor's work is delayed for any reason, including acts of the Contractor, Subcontractor's sole remedy shall be an extension of time equal to the period of delay, provided Subcontractor has given Contractor written notice of the commencement of delay within 48 hours of its occurrence. In the event that Contractor, in its sole discretion, should seek compensation from the Owner as a result of any delay, Subcontractor shall be entitled to an equitable portion of any amount recovered by Contractor, minus an aliquot share of the cost of pursuing said claim. This provision shall not be construed to require the Contractor to pursue any delay claim against the Owner or any other party.

SECTION 6. CHANGES IN WORK. Subcontractor shall make no changes in the work covered by this Agreement **without written direction from the Contractor**. Subcontractor **shall not be compensated for any change which is made without such written direction**. No changes in the work covered by this Agreement shall exonerate any surety or any bond given in connection with this Agreement.

SECTION 7. CLAIMS. If any dispute shall arise between Contractor and Subcontractor regarding performance of the work, or any alleged change in the work, Subcontractor shall timely perform the disputed work and shall give written notice of a claim for additional compensation for the work prior to commencement of the disputed work. Subcontractor's failure to give written notice prior to commencement constitutes an agreement by Subcontractor that it will receive no extra compensation for the disputed work.

SECTION 8. INSPECTION AND PROTECTION OF WORK. Subcontractor shall make the work accessible at all reasonable times for inspection by the Contractor. Subcontractor shall, at the first opportunity, inspect all material and equipment delivered to the job site by others to be used or incorporated in the Subcontractor's work and give prompt notice of any defect therein. Subcontractor assumes full responsibility to protect the work done hereunder until final acceptance by the Architect, Owner and Contractor.

SECTION 9. LABOR RELATIONS. Subcontractor shall maintain labor relations policies in conformity with the directions of the Contractor and shall be bound to and comply with all of the terms and conditions, including trust fund contributions, required by those labor agreements applicable to work performed under this Agreement to which the Contractor is bound. The specific agreements to which the Contractor is bound are listed in Section 16.

SECTION 10. TERMINATION. (i) Should Subcontractor fail to rectify any contractual deficiencies, including failure to pay its creditors, within three (3) working days from receipt of Contractor's written notice, Contractor shall have the right to take whatever steps it deems necessary to correct said deficiencies and charge the cost thereof to Subcontractor, who shall be liable for the full cost of Contractor's corrective action, including overhead, profit and actual attorneys' fees. (ii) Contractor may at any time and for any reason terminate Subcontractor's services hereunder at Contractor's convenience; in the event of termination for convenience, Subcontractor shall recover only the actual cost of work completed to the date of termination, in approved units of work or percentage of completion, plus ten percent (10%) of the actual cost of the work for overhead and profit. Subcontractor shall not be entitled to any claim or lien against Contractor or Owner for any additional compensation or damages in the event of such termination.

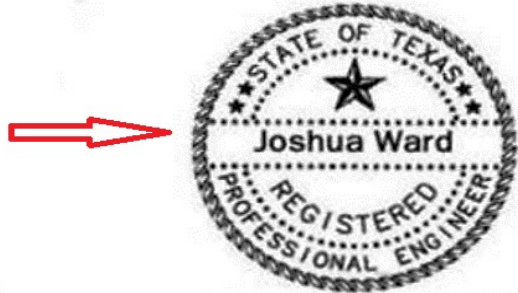
SECTION 11. BONDING OF SUBCONTRACTOR. Concurrently with the execution of this Agreement, Subcontractor shall, if required by Contractor, execute a labor and material bond and performance bond, in amount equal to one hundred percent (100%) of the Contract price. Said bonds shall be executed by a corporate surety acceptable to and Contractor and on bond forms provided by Contractor. If Contract price increases by twenty percent (20%) or more Subcontractor will provide an increase rider from surety. If there is a cardinal change in scope of Contract, Subcontractor will provide a consent of surety from surety.

SECTION 12. INDEMNIFICATION. To the fullest extent permitted by law, Subcontractor shall **indemnify and hold harmless Owner and Contractor** and their agents and employees from claims, demands, causes of actions and liabilities of every kind and nature whatsoever arising out of or in connection with Subcontractor's operations performed under this Agreement. This indemnification shall extend to claims occurring after this Agreement is terminated as well as while it is in force. The indemnity shall apply regardless of any active and/or passive negligent act or omission of Owner or Contractor, or their agents or employees, but Subcontractor shall not be obligated to indemnify any party for claims arising from the sole negligence or willful misconduct of Owner or Contractor or their agents or employees or caused solely by the designs provided by such parties. The indemnity set forth in this Section shall not be limited by insurance requirements or by any other provision of this Agreement. All work covered by this Agreement done at the site or in preparing or delivering materials or equipment to the site shall be at the sole risk of Subcontractor until the completed work is accepted by Contractor.

Bid Drawings vs Construction Drawings

- Verify that what is being built is what was covered in Bid day.
- Have the Addendums and Alternates been added to your drawings?
- Are there any mistakes or “gaps” in the estimate?
 - Did anything get missed?
- Should be marked “For Construction”.

Field Drawings



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY
Joshua Ward
ON JULY 21, 2008

Revision:

| | | |
|---|--------|-------|
| 1 | Add #1 | |
| 2 | Add #2 | |
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Project Number
0801

Sheet Number
E1.2
of

ELECTRICAL SITE PLAN

GENERAL NOTES:

ES:
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE NATIONAL ELECTRICAL CODE (NEC) AND THE NATIONAL FIRE ALARM AND SIGNAL CODE (NFPA 72).
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Galaxy Independent School District
ATHLETIC ADDITIONS



ELECTRICAL SITE PLAN

E1.2

Specifications

- An explicit set of requirements to be satisfied by a material, product or service.
- More than one Section may apply to electrical installation.
- Old numbering system (Division 16); new Master Format (Division 26).

Specifications

- Read and highlight important information.
- Share the Project information with Journeymen, etc.
- Beware of “canned specifications”.

Specification Activity #1

1) What is the minimum scale Shop Drawings are able to be submitted in?

1/4" – Section 16010 – 1.08.B.1 (Page 1610-6)

2) What is the required manufacturer for receptacles?

Hubbell – Section 16145 – Part 2 Products – 2.01.A (Page 16145-1)

• Also; substitutions are acceptable / "Or Equal" – 2.01B

3) Are you supposed to provide for spare capacity or multiple conductor tracks?

• Yes (25%) – Section 16190 – Part 2 Products – 2.01.C (Page 16190-1)

4) Are you supposed to coordinate your lighting layouts with other Trades? If so, whom?

• Yes, "...harmonize with that of all trades..." Section 16010 – 1.11D (page 16010-8)

• Mechanical / Division 15 – Section 16510 – 1.04.C (Page 16510-1)

5) Who is the Approved Manufacturer for the outdoor lighting (tennis courts)?

• Musco or "Approved" Equal – Section 16526 – 1.06 (Page 16526-2)

Submittals

- Contractor provides a detailed list of items to be used to the Architect/Engineer.
- Architect/Engineer returns Submittals noting: “Approved”, “Approved as Noted” or “Rejected”.
- “Approved” Submittals authorize release for fabrication and shipment.

Submittals (cont'd)

- May include some or all of the following:
 - Manufacturer, trade name, model number.
 - Description of use and performance characteristics.
 - Size, weight and other physical information.
 - Color and Finishes
 - Specific dimensions from jobsite required to fabricate custom components.

Submittal Activity #2

1. What size Main Breaker is installed in panel MSP? (What do the drawings and submittals say?)

This 600 Amp Panel Board is “MLO” (Main Lug Only) – Confirmed on Electrical Drawing E4.1. -Sq. D Submittal says MLO also.

2. Is MSP designed to be 120 for Fed? **Yes – As indicated in the Square D Submittal.**
3. What does the NEMA rating of the MSP panel enclosure need to be as shown on Blueprint Drawing E4.1? Is the Submittal correct?

In groups, using the Submittal, Specifications, and Drawings provided, find the answers to the questions in the handout.

Drawing E4.1 indicates NEMA 3R. The Submittal is not correct – indicates and enclosure of “Type 1”. Further investigation is needed.

4. Which company manufactures the receptacles that were submitted? Are they listed as acceptable according to the Specifications?

Pass & Seymour - Although the Specification listed Hubbell Brand receptacles, the Submittal was approved to use the Pass & Seymour Brand.

Bid Addendums?

- Addendums – Reflects changes to the Drawings or Specifications issued before bid time.
- May be an addition or deletion to the scope of work.

Bid Alternate?

- A section or phase of the project that is priced separately.
- Allows the Owner to decide whether or not to include work in the scope of the project.

Value Engineering

- A way for the Customer to reduce the cost of a project after the bid.
- Used to substitute materials or methods to reduce construction costs:
 - Example: aluminum vs. copper feeder wire

Project Turn Over

- Meeting participants will depend on your Company and size of the project
 - May be the Project Manager, Estimator and Foreman (Pre-Planning/Pre-Fab Depts., if applicable)
 - Review estimate, contract, scope letter
 - Estimator identifies how job was taken off
 - Project Manager reviews budget and preliminary schedule
 - Subcontractor work is reviewed
 - Contact information distributed.

Important Items for Consideration

- Identify potential problems or areas lacking information.
- Generate RFI's, if necessary.
- Create Preliminary Man Loading Schedule.
- Create Bulk Buy Lists (conduit, wire, strut, etc.).
- Determine temporary power requirements (job trailers, man lifts, cranes, general power & lighting for construction, permits).
- Determine tool and equipment requirements.

General Contractor's Kick Off Meeting

- Team introductions
- Scope of work.
- Job Schedule, Project timeline
- Discuss the GC's Administrative details
- Logistics of the project
- Discuss risks and concerns
- Feedback and questions

Pre-Fabrication

- What is prefabrication?
- How does it enhance productivity and/or profitability?
- In Shop vs. on Jobsite
 - 1 hour labor in the shop = 3 hours in the field!

Items to Consider for Pre-Fab

- Sections of duct bank
- Feeder conduit bends
- Fixture whips / Fixture supports
- Free-standing support racks
- Concrete boxes for masonry walls
- Temporary service risers and supports
- Conduit and cable tray racks

Sections of Duct Bank



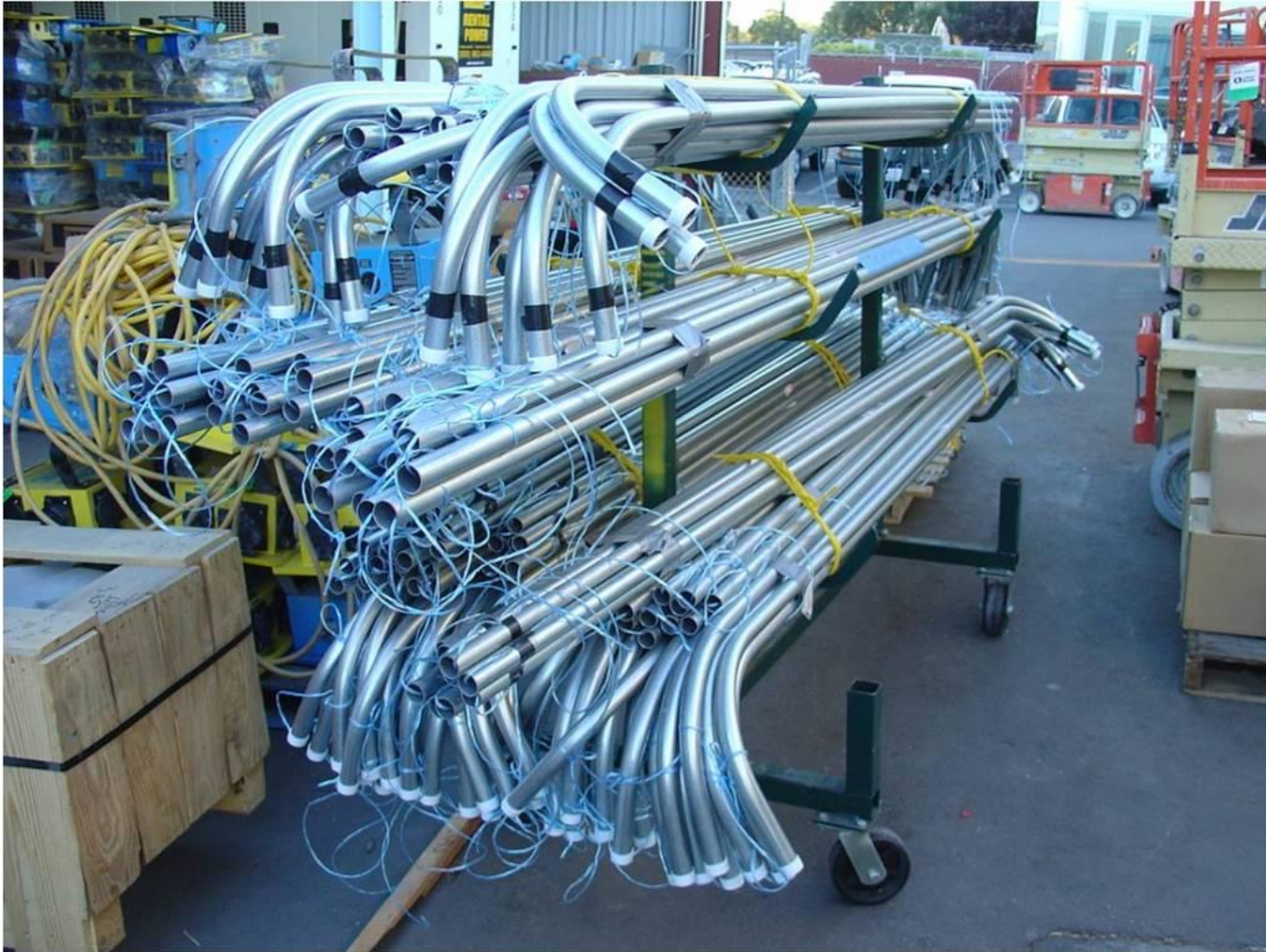
Boxes With Supports



Devices With Whips



Data/Telecom Stub Ups



Down Light With Support Plate



All Documents Activity #3

1. Are you required to notify the Owner's Rep prior to any proposed trenching? Where would you find that information? (Hint: Look on drawings)

- The Owner's Rep needs to be notified, in writing, one week prior to any trenching.

Answer: Drawing E5.1/GN #9

2. If you purchased an alternate brand of EMT connector, other than the one that was approved by the submittal, is it acceptable to install these? (Hint: Look at the Contract as well as the specs)

Not Acceptable

Answer: Contract – Section #1 / “Scope” – Agreed to use only approved materials and Section #15 / Warranty: unapproved substitutions maybe considered defective

- Specification Section 16010 – 1.05b – Material substitutions must have prior approval.

3. If an item was listed as “excluded” in the Scope Letter and you find it listed as part of the scope of work in the contract; which takes precedence?

The Contract takes precedence if it has been signed.

4. Which document would you refer to in attempting to find out if you should perform a change in the field without written notification. (Hint: We don't have a set of General Conditions in our specs; Look at the Contract)

The Contract (Section 6, “Changes in Work”).

The Field Office

- Depending on the size of the job --- it may be an office or the cab of a truck.
- Regardless of size, being organized and prepared is essential.

What are some of the core office items; books, tools, materials, etc. that you will need with you to run this project?

Core Items:



Optional Items:

These items are nice to have and will make life easier:

- Small 11" x 17" Printer
- Small padlocked gang box to store consumables
- Digital Camera (or your Cell Phone)
- Book shelves
- Plumb bob, Laser plumb bob & layout laser
- Two-Way radios?
- Coffee Pot, Microwave or Refrigerator



Layout – New Construction

Jobsite visit is a must

- Things to look for:
 - Location of job trailer (if applicable)
 - Lay down area for material
 - Employee parking
 - Location of temporary services
 - Delivery accessibility
 - Lunch areas / restroom facilities
 - Sequence of construction
 - Utility excavation areas

Start-Up Materials

- Are you familiar with the Specifications?
- Have the Submittals been approved?
- When are bulk ordered items arriving?
- How large is your starting crew size?
- What tasks will be started first?

Tools

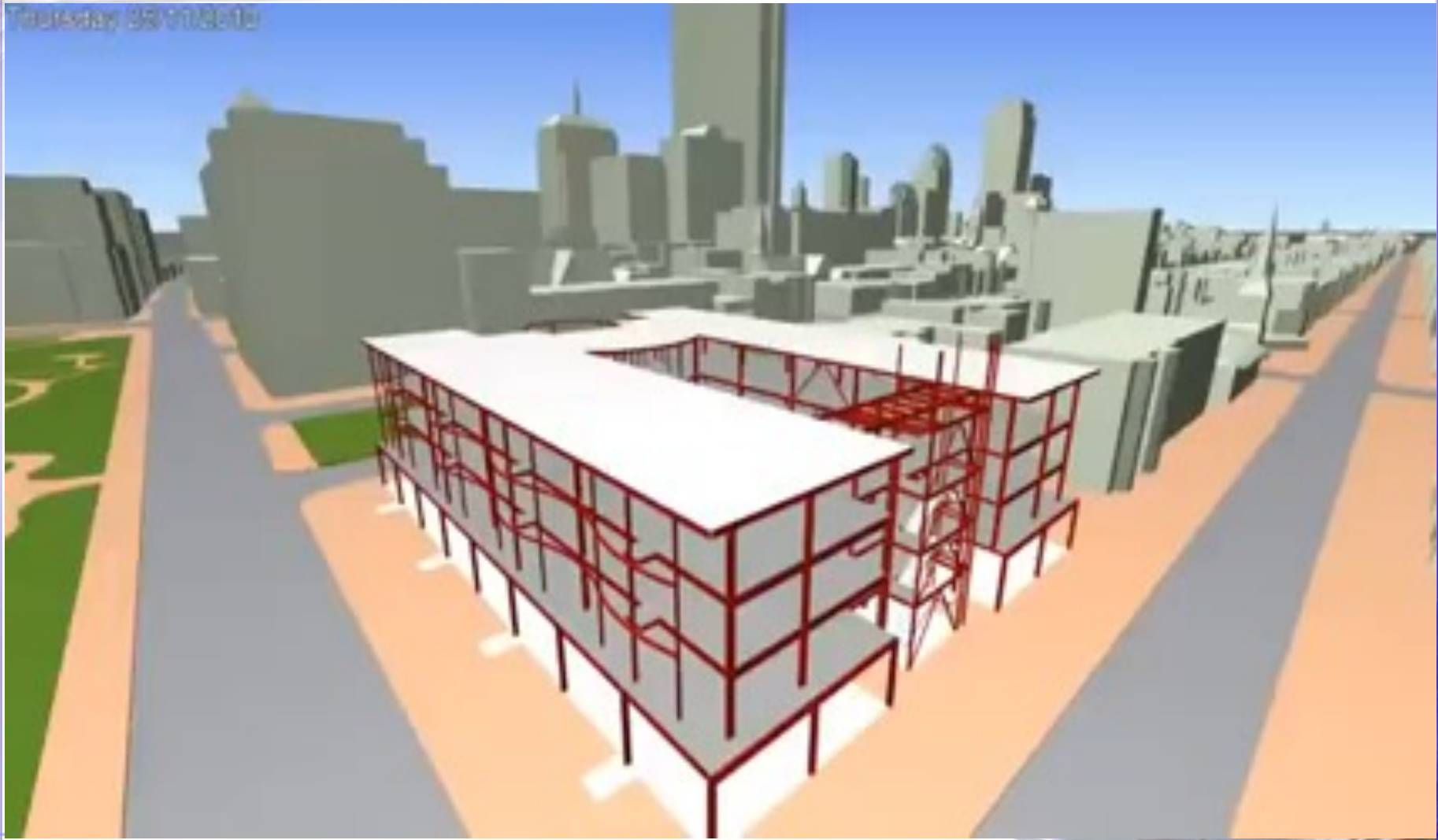
- Keep track of the tools on your project!
- Store tools appropriately.
- Know who has access/control of tools.
- Send tools no longer needed back to the Shop.
- Plan use of rental tools.

Building Information Modeling



Autodesk Navisworks

Thursday, 28/10/2010

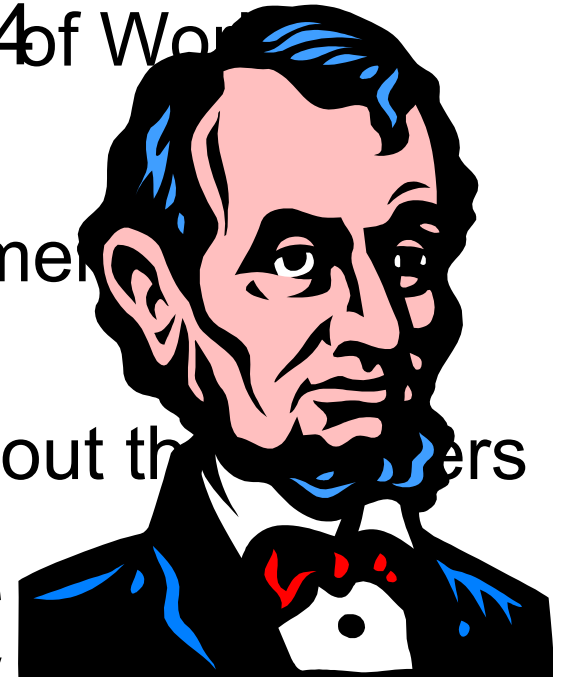


Trimble - Digital Construction Layout



Summary

- Remember what Lincoln said in his 4 of Work hours of sharpening the axe?
- Be assured that the contract document is without flaws;
 - **Get prepared and do some planning before the job starts**
 - it's your job to identify and flush out the issues for the project team
 - **Starting the project out right will positively affect the flow of the job**
 - **Get on board with the new digital Technologies that are constantly changing and improving.**



Abraham Lincoln