

# Credible Condition Assessments, Cost Estimates, Remaining Lives & Due Diligence for Licensed Professionals

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Theodore Salgado, P.E., RS, PRA  
Reserve Advisors, Inc.



2015 Building Inspection  
Engineering Conference



# Today's Conference Participants

- Owners of Engineering Consulting Companies
- Decision Makers within these Companies
- Architects
- Engineers



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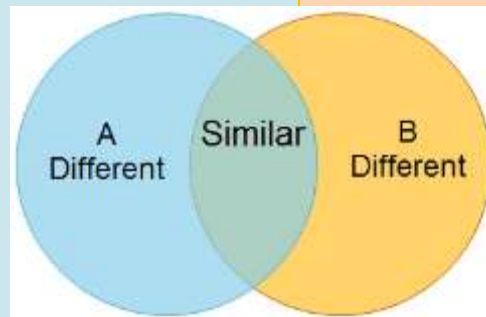
# Concepts for Discussion

- Stewardship
- Ethics
- Process of Defining Solutions re:
  - Condition Assessments
  - Cost Estimates
  - Remaining Lives (criticality of a future action)
  - Due Diligence for the Licensed Professional

# Introductions – Concept of Good Stewardship

NABIE - To serve the public by advancing the skill and art of engineering analysis, investigation, consultation ...based on engineering knowledge or judgment.

Reserve Study – a tool to aid community associations or other entities maintain physical plant/property for the future repair, restoration and replacement during its economic life.



# Stewardship

Def.

1 : the office, duties, and obligations of a steward

2 : the conducting, supervising, or managing of something; especially the careful and responsible management of something entrusted to one's care

# Concept of Ethics - NSPE

Engineers, in the fulfillment of their professional duties, shall:

1. Hold paramount the safety, health and welfare of the public.
2. Perform services only in areas of their competence.
3. Issue public statements only in an objective and truthful manner.
4. Act for each employer or client as faithful agents or trustees.
5. Avoid deceptive acts.
6. Conduct themselves honorably, responsibly, ethically, lawfully

# Concepts for Discussion

Stewardship - careful and responsible management of something entrusted to one's care

Ethics –

- Def. “moral principles that govern a person's or group's behavior”
- Extension of stewardship applied to relationships
- Violate ethics = broken relationship(s)

# Ethics

- Stewardship applied to relationships





# Ethics – NSPE

From NSPE code of ethics...

3. Issue public statements only in an objective & truthful manner.
5. Avoid deceptive acts.

Google the words on the following slides,  
and this is what comes up....



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# Ethics



# Ethics

Google: “Misremembered”



# Ethics

Google: “Benghazi”(what difference does it make)



# Ethics

“Weapons of mass destruction”

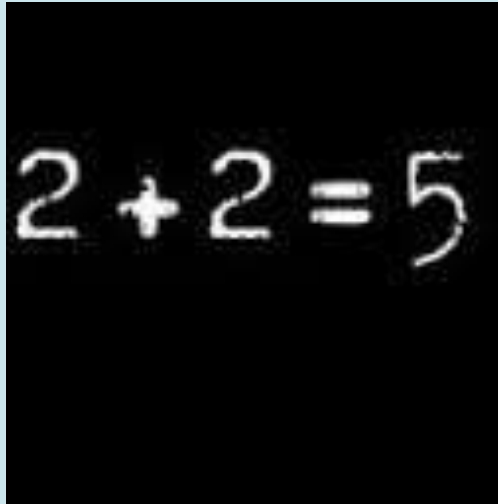


“Read my lips, no new taxes”



# Ethics

Trust me,  
I'm a lawyer


$$2 + 2 = 5$$

# Defining Solutions

- First, work the solution in the context of ethics
  - Holding foremost the interests of the public
  - Practicing only within your area of expertise
  - Serving client within the scope of proposed work

# Process of Defining Solutions - Framework

1. Condition Assessments – Why & What
    - From client's chair
    - From the inspector's chair
  2. Cost Estimates – What goes into the estimate?
  3. Remaining Lives (criticality of a future action) – dependent on the defined future event
- Due Diligence for the Licensed Professional – application of ethics on points 1, 2, 3



# Condition Assessments & Ethics

## Client

- Wants & Needs
- Do the client's wants and needs correlate?
- Do the client's needs match up with the public's?

## Inspector

- Welfare of the public
- Area of Expertise
- Disclosure to Client/Public
- Deception - unintended

# Condition Assessments - Stewardship

## From the Client's Chair

- Duty to Public?
- Duty to Organization?
- Duty to Third Parties?
- Other \_\_\_\_\_
- Other \_\_\_\_\_
- Other \_\_\_\_\_

## From the Inspector's chair

- Safety and Welfare
- Cost factors
- Disclosure
- Other match-ups?
- \_\_\_\_\_
- \_\_\_\_\_

# Examples of Conflict

## Client

- Wants defects identified
- Does not want third party aware

## Inspector

- Wants to identify defects
- Feels duty to disclose defects to a third party
- What is the process?
  - Pre-sale
  - Inspection phase
  - Report phase of service

# Cost Estimates

Scope & Definitions re: cost estimate

Factual (physical) Analysis

Opinion Relating Factual Analysis  
to Scope and Definitions

# Cost Estimates

## Definition...

That amount required today derived from the quantity of a Reserve Component and its unit cost to replace or repair a Reserve Component using the most current technology and construction materials, duplicating the productive utility of the existing property at current local market prices for materials, labor and manufactured equipment, contractors' overhead, profit and fees, but without provisions for building permits, overtime, bonuses for labor or premiums for material and equipment. We include removal and disposal costs where applicable.

# Cost Estimates

That amount required today derived from ...

1. the quantity of a Reserve Component
2. its unit cost to replace or repair a Reserve Component
3. using the most current technology and construction materials
4. duplicating the productive utility of the existing property
5. at current local market prices for materials, labor and manufactured equipment, contractors' overhead, profit and fees, but
6. without provisions for building permits, overtime, bonuses for labor or premiums for material and equipment
7. And removal and disposal costs where applicable

# Cost Estimates

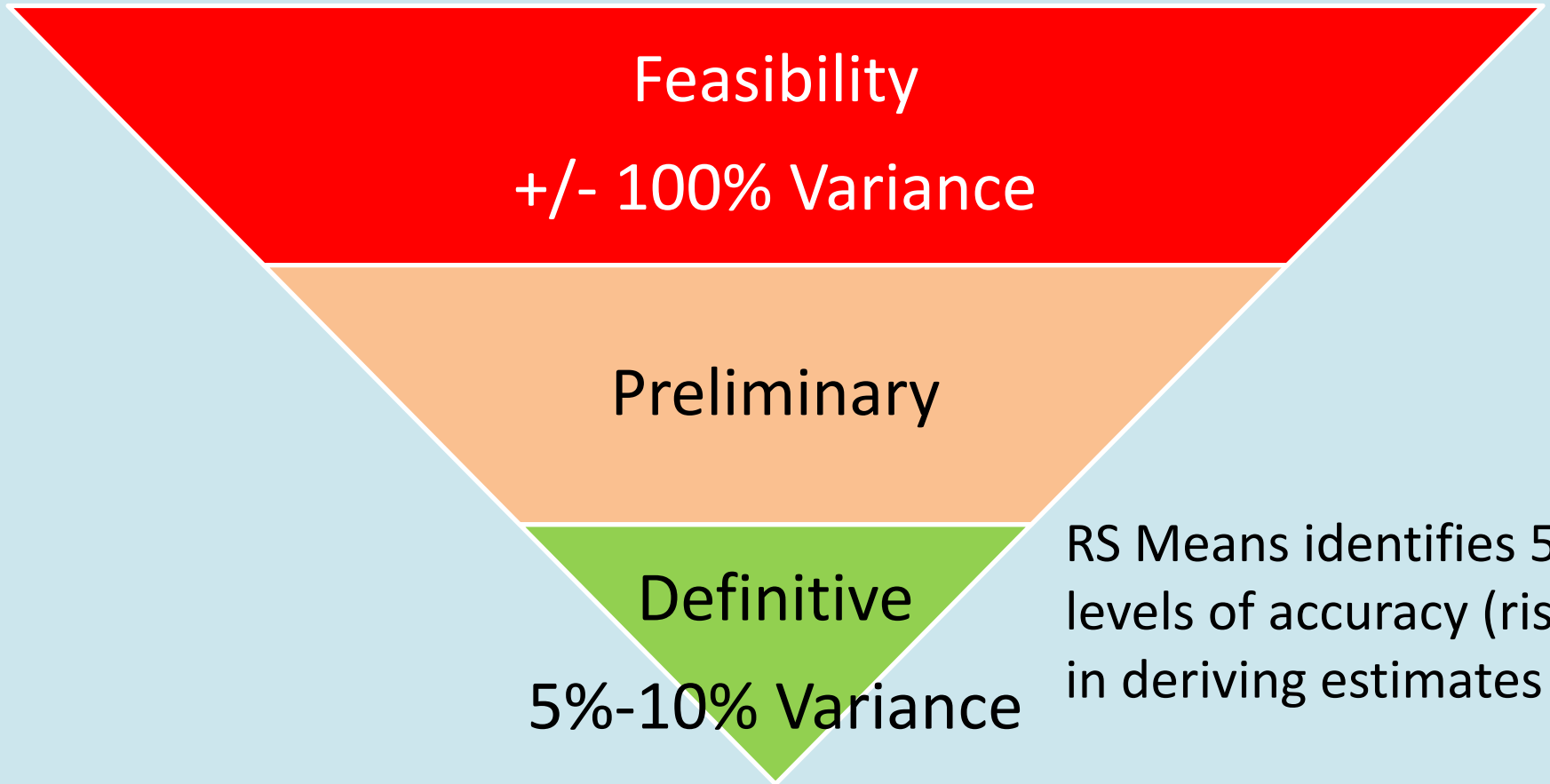
## Excludes ...

- provisions for building permits
- overtime,
- bonuses for labor or
- premiums for material and equipment

## • Examples

- Repoint 300 square feet of brick v. 3,000
- Replace (1) 5-ton roof top condenser or all (3) units
- Replace 75-ton chiller in August rather than February

# Cost Estimates



RS Means identifies 5 levels of accuracy (risk) in deriving estimates



# Cost Estimates - US Dept. of Energy

Class	Name	Purpose	Project Definition Level (where "risk is inversely related to project definition)
Class 5	Order of Magnitude	<b>Screening or Feasibility</b>	<b>0% to 2% (risk is high)</b>
Class 4	Intermediate	Concept Study or Feasibility	1% to 15%
Class 3	Preliminary	Budget, Control, Authorization	10% to 40%
Class 2	Substantive	Control or Bid/Tender	30% to 70%
Class 1	Definitive	Check Estimate or Bid/Tender	50% to 100% (risk is low)

# Remaining Lives

- The estimated remaining functional or useful time in years of a *Reserve Component* based on its age, condition and maintenance
- (criticality of a future action) – dependent on the defined future event
- Accuracy or Risk is Analogous to Cost Estimates

# Remaining Lives (Timing of an Event)

- Another element of Risk, i.e.,
  - Analogous to Cost Estimates
  - Inversely related to the future event

(Meaning the farther out in time the event, the greater the variance to the actual event in terms of cost and actual date)

# The Inherent Risk when Estimating Remaining Lives and Cost

## Factor of Risk is Analogous to Cost Estimates

- a. Is the design conceptual?
- b. Does the design include definitive specifications with plans?
- c. How confident (risk) are we about the replacement cost of today v. 2025?

# Remaining Lives (Timing of an Event)

Factor of risk is inversely related to distance in time from today to the future event, i.e.,

- a. The 1,000 Hour Light Bulb is Burned out now
  - b. v. The Light Bulb has 832 hours of on-time
- 
- How confident am I (risk) that the light will continue to work another 168 hours?

# Process of Defining Solutions

Let's substitute the word "thinking" for "solution"

Problem Oriented Thinking

vs.

Goal Oriented Thinking

# Problem Oriented Thinking

- Challenges
  - Focus on Symptoms
  - Focus on Eliminating Symptoms
  - Not always, but often ignores Cause of Problem
- Chief Benefit – Direct and Quick

# Problem Oriented Thinking

- Examples: Problem Oriented Thinking (Solutions)
  - The Headache (symptom) is Eliminated by Ibuprofen
  - The Raveling of Asphalt is Eliminated by Overlayment
  - The Wet Basement is Eliminated by Sump Pump
- None of the above analyze the Causes
- Goal Oriented Thinking Tends to Focus on Outcomes



# Goal Oriented Thinking

## Goal Oriented Thinking (Solution) for the Headache

- Goal is multifaceted..
  - Eliminate Headache
  - Prevent Recurrence of Headache
- Research/Experience/Observation Point to a Solution of Continuous Re-Hydration

# Goal Oriented Thinking

## Goal Oriented Solution for Wet Basement

Goal is multifaceted..

- Research/Experience/Observation
- Eliminate Wet Basement (more immediate)
- Prevent Recurrence of “Problem”
- Research/Experience/Observation Point to a Solution of Drainage Away from Foundation

# Scientific Method

## Ask/Define

- **Define Goals** or Outcomes
- **Define Ways to Measure Success**

## Research Symptoms

- History and Behavior
- Observation
- **Definition of the Problem(s)**

## Hypothesis (proposition)

- Statement of Proposed **Solution** to Problem(s)
- Test Hypothesis Against Desired **Goals-Outcomes**

## Application

- Apply **Solution**
- Objective Measure of Success

# Concepts for Discussion

- Stewardship -
- Ethics -
- Goal Oriented Solutions for
  - Condition Assessments
  - Cost Estimates
  - Remaining Lives (criticality of a future action)
  - Due Diligence for the Licensed Professional

# Questions?

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