

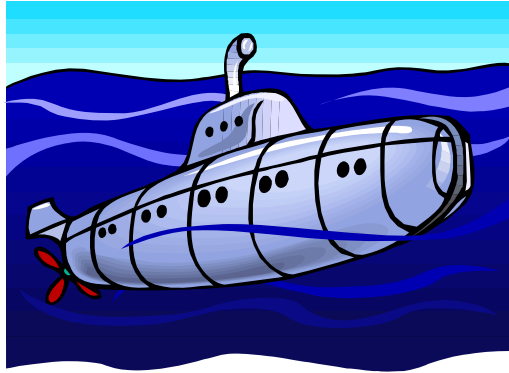


**2007 Purdue Road School**  
***We Are Not Perfect***

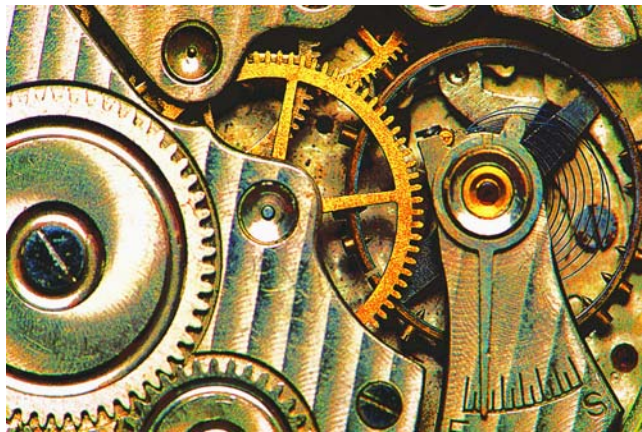
*We aren't building anything that will go  
into outer space*



*We aren't building anything that will go  
into the depths of the ocean*



*We aren't building a Swiss watch*



*We are building transportation facilities  
with the taxpayer's money*



*We are building transportation facilities  
that must address:*

- Safety
- Mobility
- Economy



*Generally our record is good*

- Reduced fatalities
- Reduced congestion
- Economic growth



*However:*

*We Aren't Perfect*



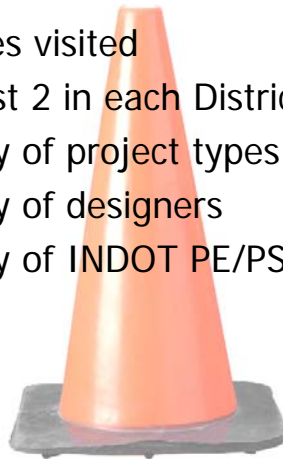
*Improvement requires that we learn from  
our mistakes*

*“Futility is doing the same thing  
over & over and expecting  
different results!”*



*Construction Projects Surveyed in 2006*

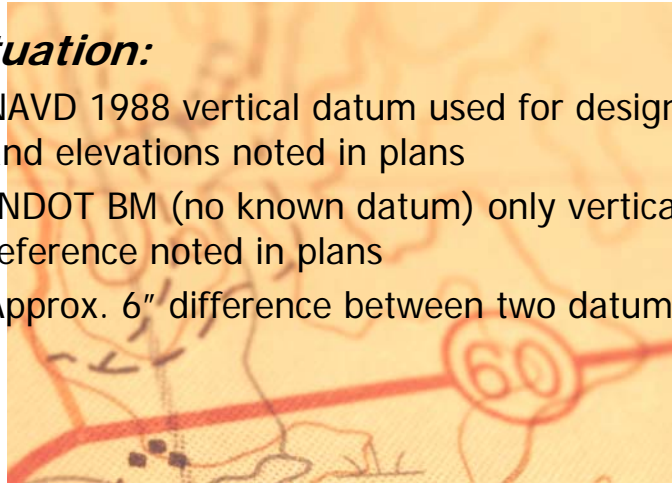
- 13 sites visited
- At least 2 in each District
- Variety of project types
- Variety of designers
- Variety of INDOT PE/PS personnel



## 1. Does Anybody Really Know What the Elevation Is?

### ■ **Situation:**

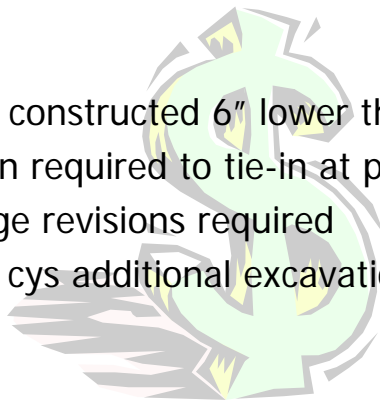
- NAVD 1988 vertical datum used for design and elevations noted in plans
- INDOT BM (no known datum) only vertical reference noted in plans
- Approx. 6" difference between two datum



## 1. Does Anybody Really Know What the Elevation Is?

### ■ **Result:**

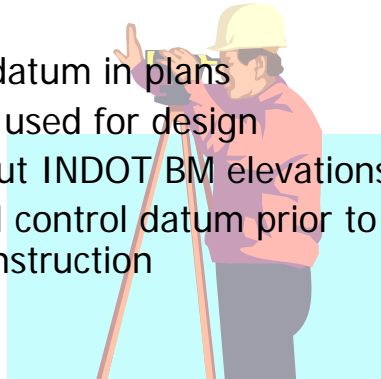
- Project constructed 6" lower than planned
- Revision required to tie-in at project limits
- Drainage revisions required
- 40,000 cys additional excavation



## 1. Does Anybody Really Know What the Elevation Is?

### ■ **Solution:**

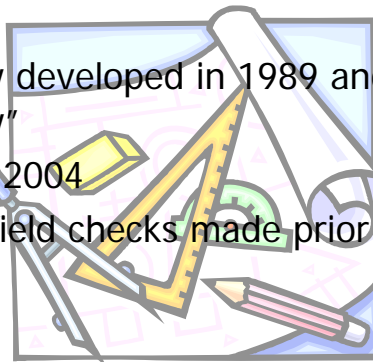
- Note design datum in plans
- Callout TBMs used for design
- Do NOT callout INDOT BM elevations
- Verify vertical control datum prior to beginning construction



## 2. What is the Born-On Date for Those Plans?

### ■ **Situation:**

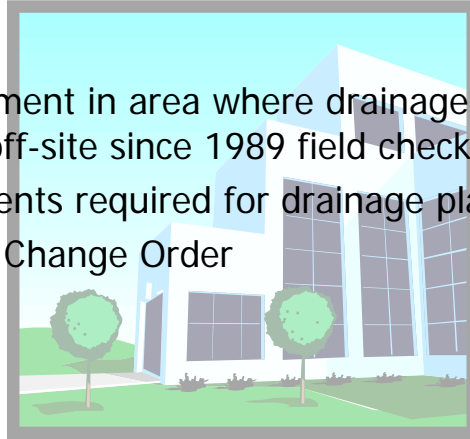
- Plans originally developed in 1989 and held as "shelf-ready"
- Contract let in 2004
- No additional field checks made prior to letting



## 2. What is the Born-On Date for Those Plans?

### ■ **Result:**

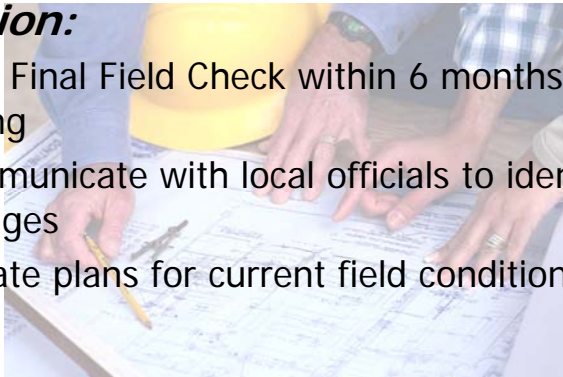
- Development in area where drainage was to flow off-site since 1989 field check
- Adjustments required for drainage plan
- \$65,000 Change Order



## 2. What is the Born-On Date for Those Plans?

### ■ **Solution:**

- Hold Final Field Check within 6 months of letting
- Communicate with local officials to identify changes
- Update plans for current field conditions

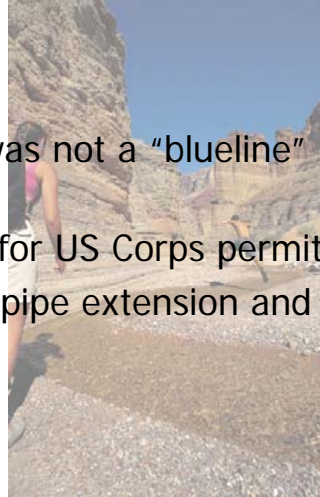




### 3. How Dry is a Dry Creek?

#### ■ **Situation:**

- Assumed dry swale was not a “blueline” water of the US
- No application made for US Corps permit
- Contract let included pipe extension and widening in the area



### 3. How Dry is a Dry Creek?

#### ■ **Result:**

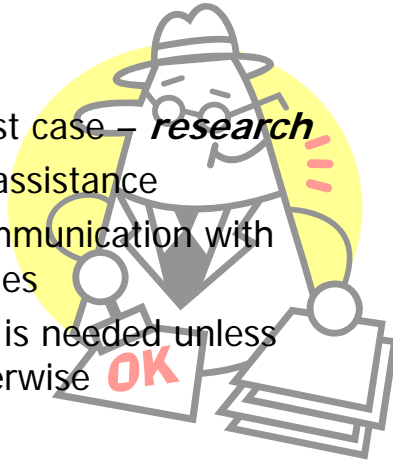
- Corps differs with designer's interpretation & requires a permit
- Contract delayed while permit is obtained
- Adjustments made to contract phasing
- Work pushed into additional season



### 3. How Dry is a Dry Creek?

#### ■ **Solution:**

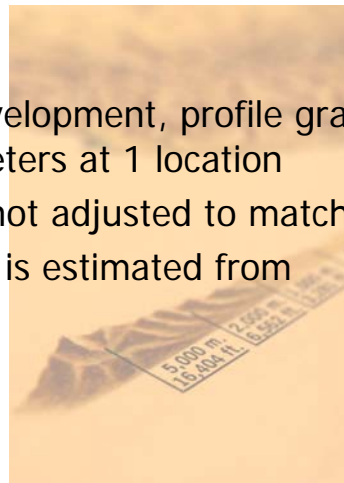
- Don't assume best case – **research**
- Contact OES for assistance
- Document all communication with regulatory agencies
- Assume a permit is needed unless documented otherwise **OK**



### 4. It's Just a Little Change in Altitude

#### ■ **Situation:**

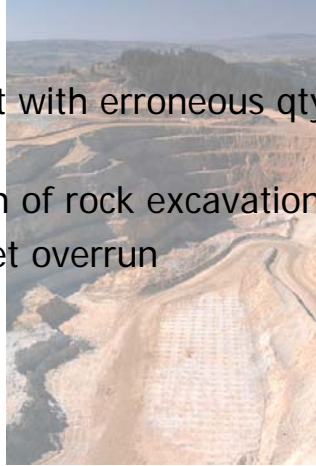
- During plan development, profile grade is lowered ~ 9 meters at 1 location
- X-sections are not adjusted to match
- Excavation qty. is estimated from x-sections



#### 4. *It's Just a Little Change in Altitude*

##### ■ **Result:**

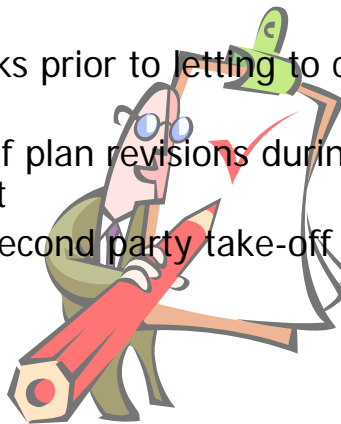
- Contract is let with erroneous qty. of excavation
- Large overrun of rock excavation
- Project budget overrun



#### 4. *It's Just a Little Change in Altitude*

##### ■ **Solution:**

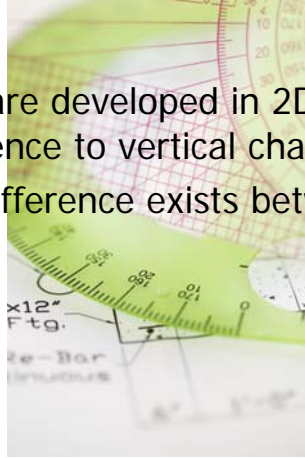
- QC/QA checks prior to letting to catch plan conflicts
- Keep a log of plan revisions during development
- Consider a second party take-off of major items



## 5. It Looks Fine From Up Here

### ■ **Situation:**

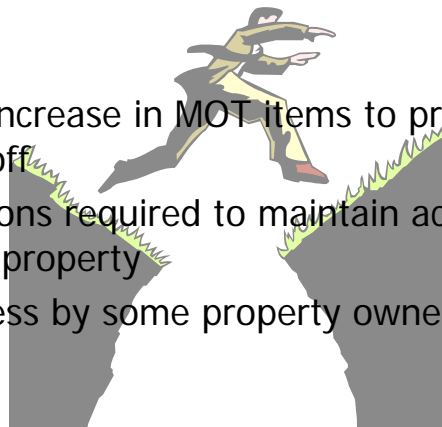
- MOT phases are developed in 2D plan view without reference to vertical changes
- 7' elevation difference exists between phases



## 5. It Looks Fine From Up Here

### ■ **Result:**

- Significant increase in MOT items to protect edge drop-off
- Major revisions required to maintain access to adjacent property
- Loss of access by some property owners



## 5. It Looks Fine From Up Here

### ■ **Solution:**

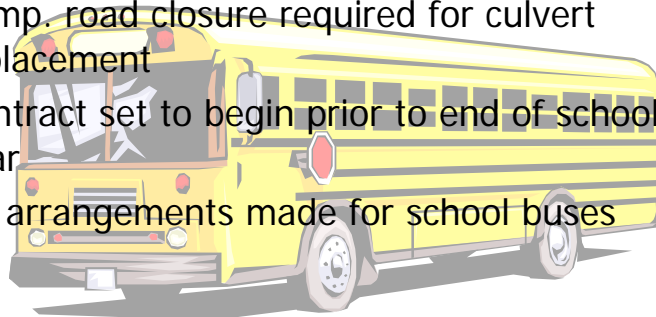
- Develop MOT plans in harmony with both plan & x-sections
- Use field checks to re-examine constructability prior to letting



## 6. You Can't Get There From Here

### ■ **Situation:**

- Temp. road closure required for culvert replacement
- Contract set to begin prior to end of school year
- No arrangements made for school buses



## 6. You Can't Get There From Here

### ■ **Result:**

- Temp. R/W acquired for bus turnaround
- Additional costs for changes required



## 6. You Can't Get There From Here

### ■ **Solution:**

- Include schools & emergency responders in traffic maintenance planning
- Set contract time for low usage periods if possible
- Consider delayed start dates when applicable



## 7. Wrong Way Right-of-Way

### ■ **Situation:**

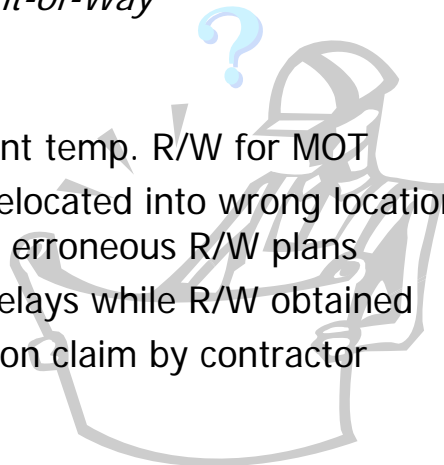
- Required temporary R/W miscalculated
- Permanent R/W not obtained prior to letting
- R/W shown incorrectly on plans



## 7. Wrong Way Right-of-Way

### ■ **Result:**

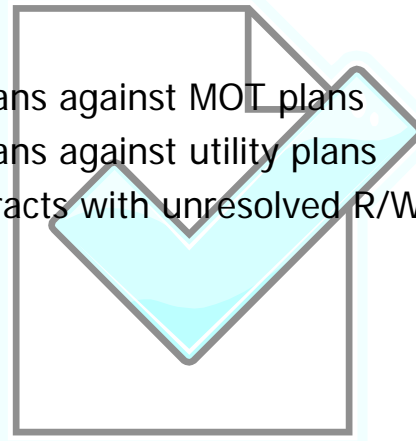
- Insufficient temp. R/W for MOT
- Utilities relocated into wrong location based on erroneous R/W plans
- Project delays while R/W obtained
- \$1.6 million claim by contractor



## 7. Wrong Way Right-of-Way

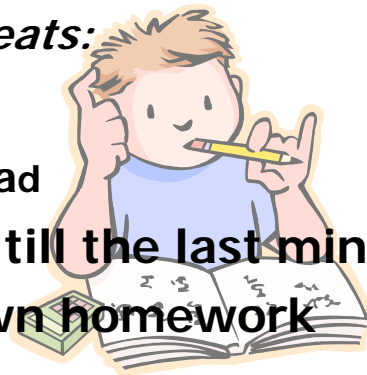
### ■ **Solution:**

- Check R/W plans against MOT plans
- Check R/W plans against utility plans
- Don't let contracts with unresolved R/W



### ■ **Kuchler's Caveats:**

- **Plan Ahead**
- **Don't wait till the last minute**
- **Do your own homework**





*We aren't building anything that has to survive at the top of Mt. Everest*



*Or in the harshest desert*



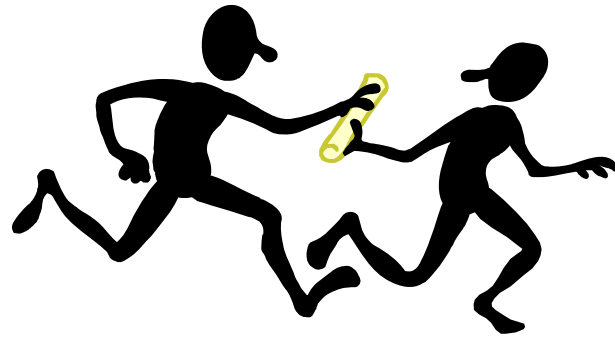
*But we do need to learn from our mistakes and strive for improvement*



*We don't need to point fingers & assign blame*



*We just need to work as a team and support each other*



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***We Are Not Perfect***

***Comments & Questions ?***