

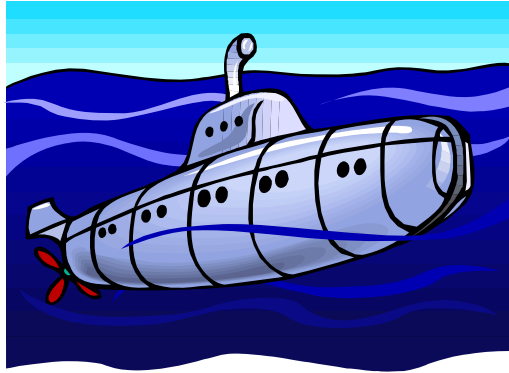


2007 Purdue Road School
We Are Not Perfect

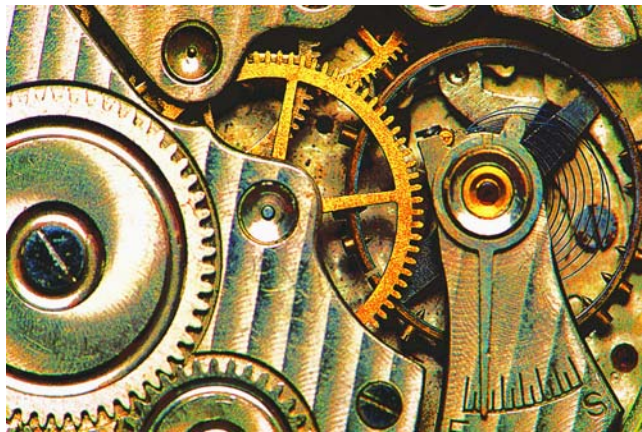
*We aren't building anything that will go
into outer space*



*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



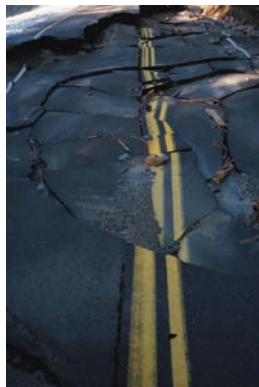
Generally our record is good

- Reduced fatalities
- Reduced congestion
- Economic growth



However:

We Aren't Perfect



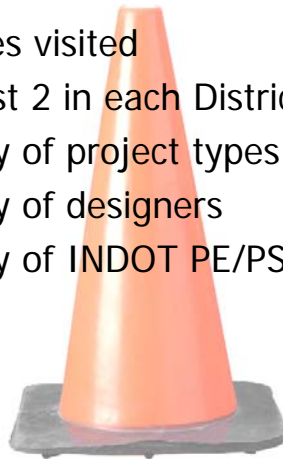
*Improvement requires that we learn from
our mistakes*

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



Construction Projects Surveyed in 2006

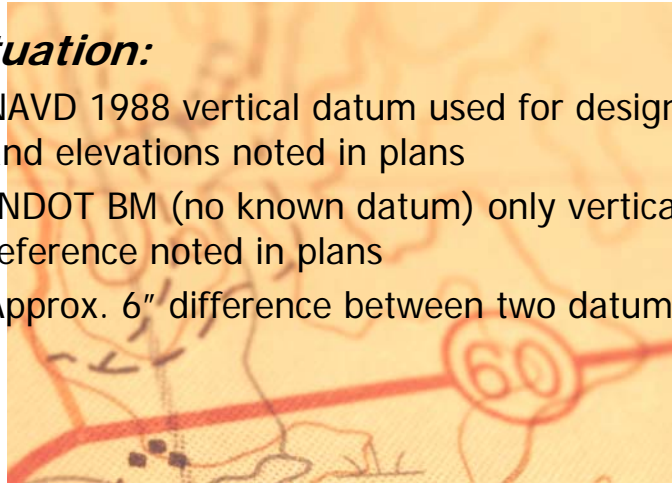
- 13 sites visited
- At least 2 in each District
- Variety of project types
- Variety of designers
- Variety of INDOT PE/PS personnel



1. Does Anybody Really Know What the Elevation Is?

■ **Situation:**

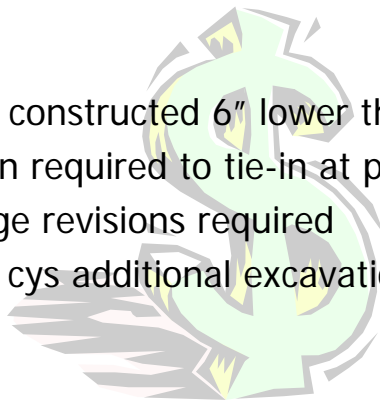
- NAVD 1988 vertical datum used for design and elevations noted in plans
- INDOT BM (no known datum) only vertical reference noted in plans
- Approx. 6" difference between two datum



1. Does Anybody Really Know What the Elevation Is?

■ **Result:**

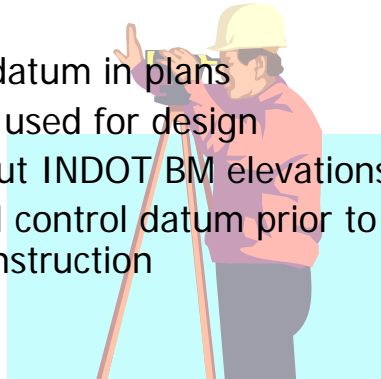
- Project constructed 6" lower than planned
- Revision required to tie-in at project limits
- Drainage revisions required
- 40,000 cys additional excavation



1. Does Anybody Really Know What the Elevation Is?

■ **Solution:**

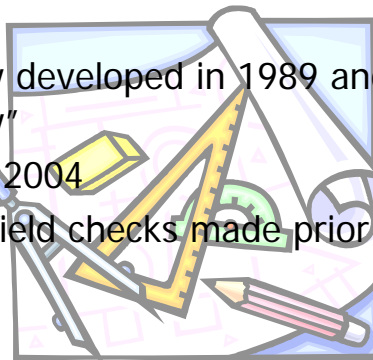
- Note design datum in plans
- Callout TBMs used for design
- Do NOT callout INDOT BM elevations
- Verify vertical control datum prior to beginning construction



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

■ **Situation:**

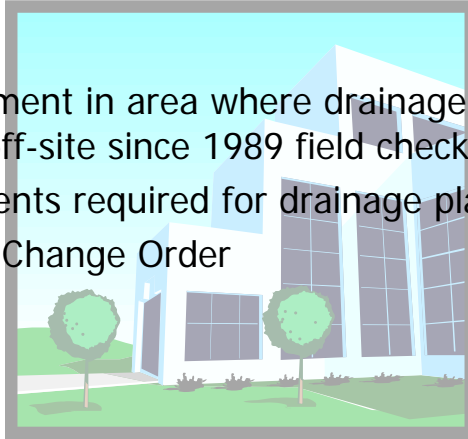
- Plans originally developed in 1989 and held as "shelf-ready"
- Contract let in 2004
- No additional field checks made prior to letting



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

■ **Result:**

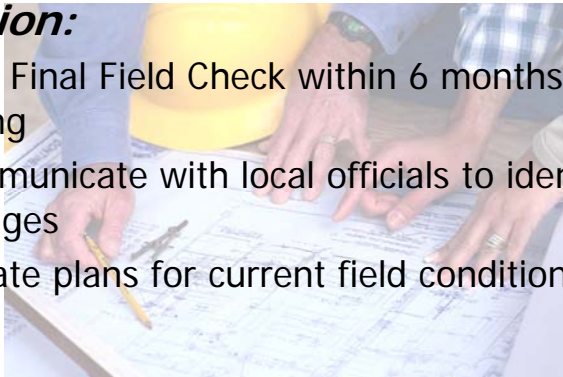
- Development in area where drainage was to flow off-site since 1989 field check
- Adjustments required for drainage plan
- \$65,000 Change Order



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

■ **Solution:**

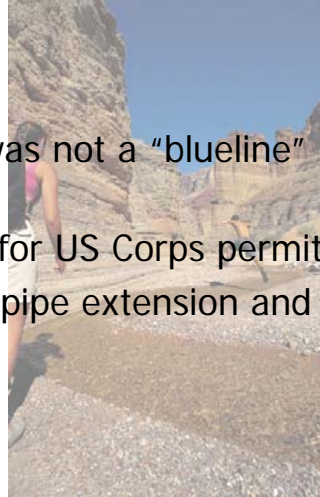
- Hold Final Field Check within 6 months of letting
- Communicate with local officials to identify changes
- Update plans for current field conditions



3. How Dry is a Dry Creek?

■ **Situation:**

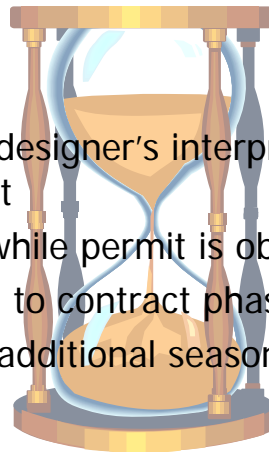
- Assumed dry swale was not a “blueline” water of the US
- No application made for US Corps permit
- Contract let included pipe extension and widening in the area



3. How Dry is a Dry Creek?

■ **Result:**

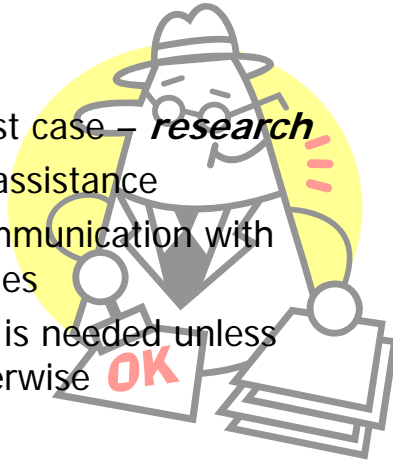
- Corps differs with designer's interpretation & requires a permit
- Contract delayed while permit is obtained
- Adjustments made to contract phasing
- Work pushed into additional season



3. How Dry is a Dry Creek?

■ **Solution:**

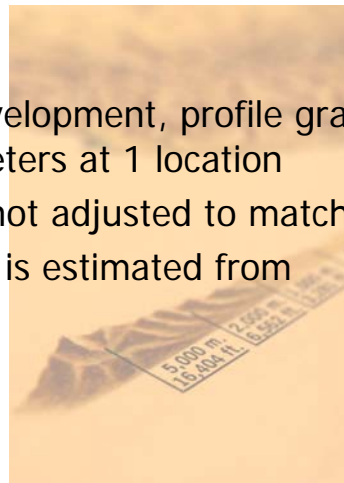
- Don't assume best case – **research**
- Contact OES for assistance
- Document all communication with regulatory agencies
- Assume a permit is needed unless documented otherwise **OK**



4. It's Just a Little Change in Altitude

■ **Situation:**

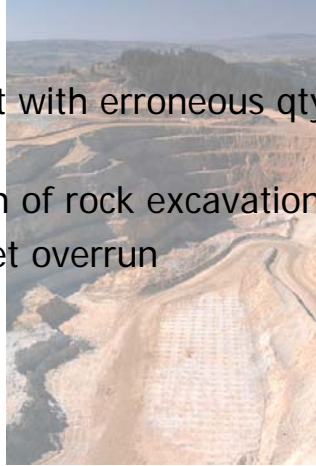
- During plan development, profile grade is lowered ~ 9 meters at 1 location
- X-sections are not adjusted to match
- Excavation qty. is estimated from x-sections



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

■ **Result:**

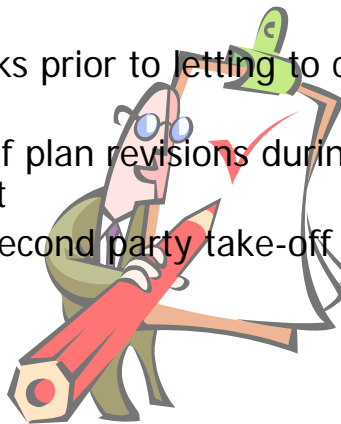
- Contract is let with erroneous qty. of excavation
- Large overrun of rock excavation
- Project budget overrun



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

■ **Solution:**

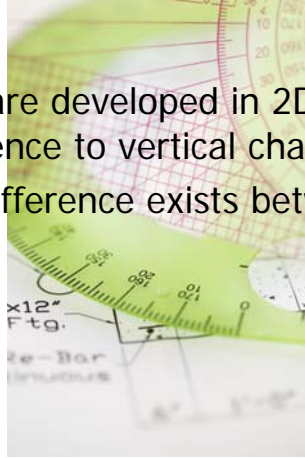
- QC/QA checks prior to letting to catch plan conflicts
- Keep a log of plan revisions during development
- Consider a second party take-off of major items



5. It Looks Fine From Up Here

■ **Situation:**

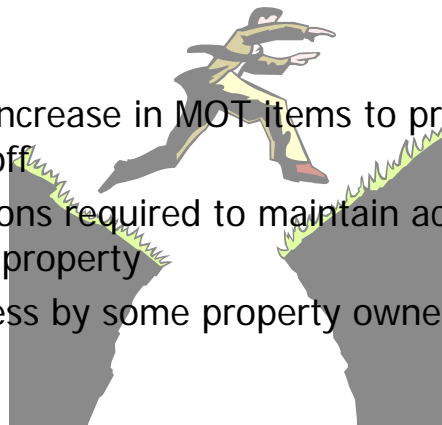
- MOT phases are developed in 2D plan view without reference to vertical changes
- 7' elevation difference exists between phases



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:**

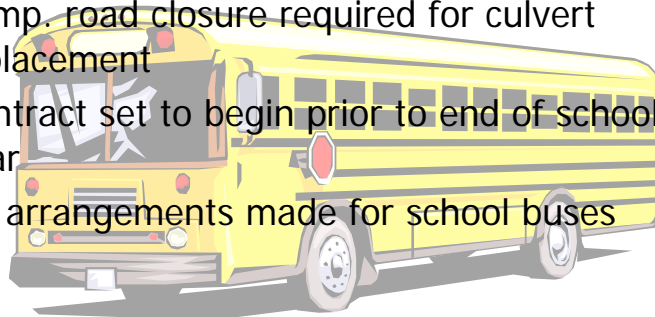
- Develop MOT plans in harmony with both plan & x-sections
- Use field checks to re-examine constructability prior to letting



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:**

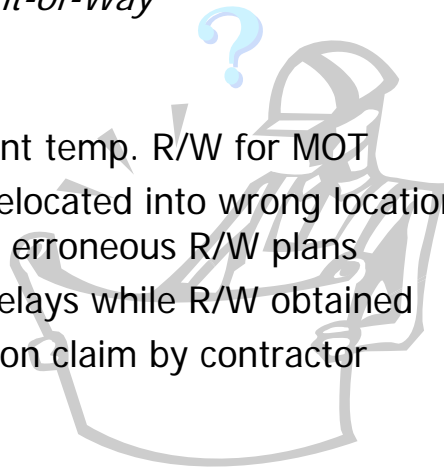
- Required temporary R/W miscalculated
- Permanent R/W not obtained prior to letting
- R/W shown incorrectly on plans



7. Wrong Way Right-of-Way

■ **Result:**

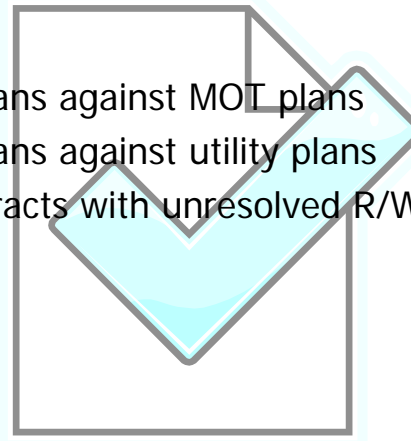
- Insufficient temp. R/W for MOT
- Utilities relocated into wrong location based on erroneous R/W plans
- Project delays while R/W obtained
- \$1.6 million claim by contractor



7. Wrong Way Right-of-Way

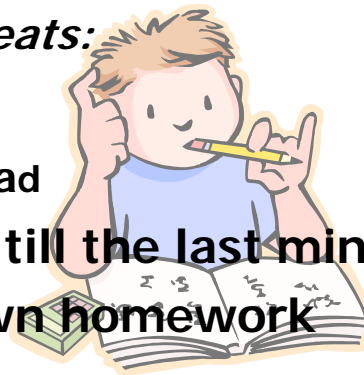
■ **Solution:**

- 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



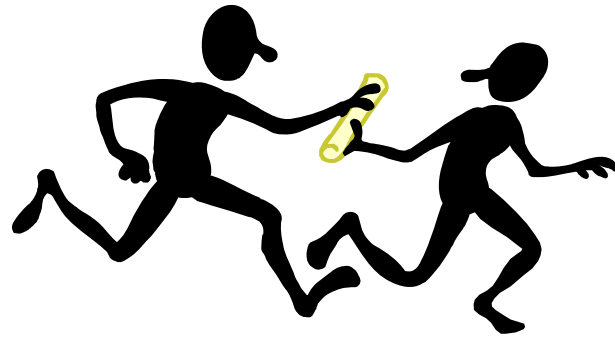
But we do need to learn from our mistakes and strive for improvement



We don't need to point fingers & assign blame



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



2007 Purdue Road School

We Are Not Perfect

Comments & Questions ?