



# ASHE Altoona/ PennDOT 9-0 Workshop

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## Construction Update

**Brad J. Brumbaugh, P.E.**  
**Assistant District Executive - Construction**

April 27, 2023



# Construction Unit Personnel Changes

## **District Materials Engineer – Larry Riggleman**

- Kevin Gnegy took position with Central Office as statewide Pavement Materials Engineer
- Larry Riggleman promoted (formerly Finals Unit Supervisor)

## **Assistant Construction Engineer (ACE) for Bedford/ Fulton – TBD**

- Tom Helsel retired 4/14/23

## **Finals Unit Supervisor - TBD**

- Larry Riggleman promoted to District Materials Engineer

## **Assistant Structure Control Engineer - TBD**

- Bob Heim retired 4/14/23

# Construction Unit Personnel Changes

## Experience Level of Construction Field Staff

- 59% of ET/TCI staff < 2 years experience
- 53% of TCIS staff < 2 years in position



# 2023 Focus Areas

# Topsoil & Seeding

Too often, our efforts to deliver quality projects are undermined at the end due to poor seeding results

- Particularly problematic in residential and commercial areas
- Negative public perception

Discussion item with IIC Council

- DCQR issued 2/3/23 ~ Best Practices
- Potential specification enhancements (topsoil quality)

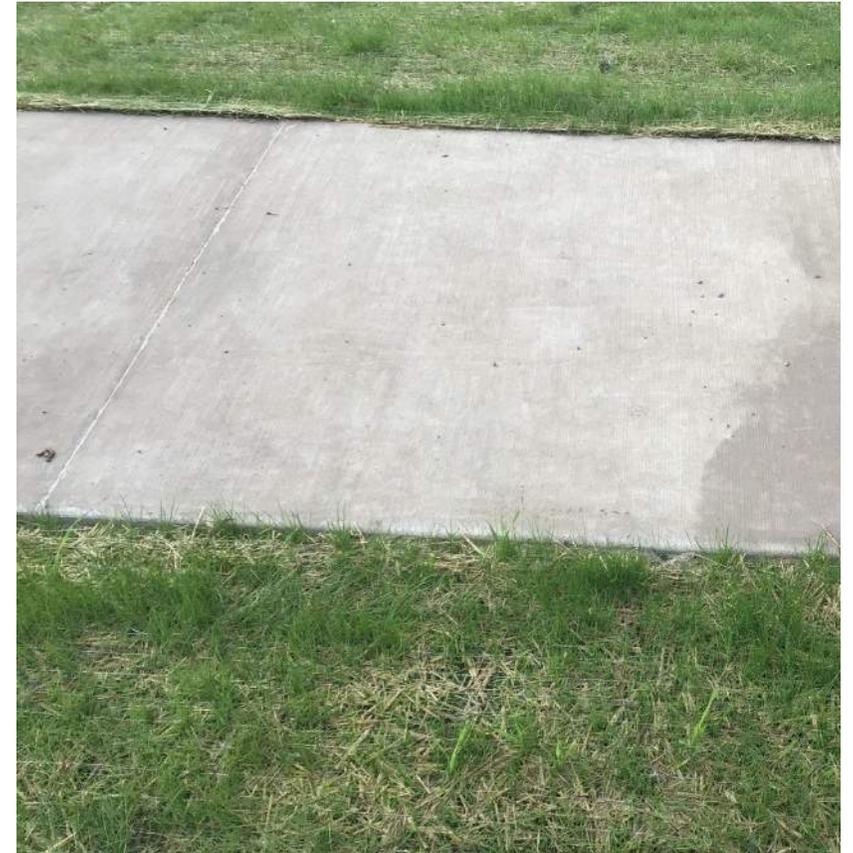
# Topsoil Best Management Practices

- TILL subsoil to required depth: 2 inches for furnished, 6 inches for placing stockpiled
- REMOVE all debris larger than 2 inches
- KEEP IT DRY by covering if stockpiling either stockpiled or furnished topsoil on site
- Make sure it is DRY if bringing in furnished topsoil
- COMPACT as required for proper lift thickness (lightweight/static)



# Seeding Best Management Practices

- NEVER use HAY MULCH for topsoil areas (good practice to use straw or wood cellulose for all permanent seeding - not hay)
- TILL *if ANY area to be seeded is hard panned or crusted* ~ need to till to a depth of 2 inches if it is. On slopes this can be accomplished by tracked equipment travelling up and down the slope.
- TILL if the seeded area is topsoil, 3:1 or flatter till to a depth of 2 inches - *topsoil must be compacted during placement and then tilled prior to seeding*
- TILL previously temporarily seeded or mulched topsoil areas before applying permanent seed
- REMOVE DEBRIS that is > 2 inches (anywhere that must be mowed and includes all topsoil areas)
- MOW and WATER if needed or required
- VERIFY GROWTH at 90 days for 70% coverage. Department to direct re-seeding if needed. Re-seeding is only paid for if Department directed out of date seeding (and area was prepared properly) or if a slope fails



# Guides Issues - Coordination & Field Changes

Modifying as-designed guiderail where Design PM was not notified

- Modifications to as-designed guiderail need to be coordinated with Design (refer to DCC #22-04 & DCC #23-01)
  - ❖ Any change that results in a **non-standard** installation MUST be taken back to the Safety Review Committee for review/approval
- Implementing '*Traffic Barrier Pre-Installation Field Mark-Out*' special provision into contracts effective 3/30/23
  - ✓ Issued accompanying internal DCC #23-01 on 1/25/23
  - ✓ Keep in mind this will only impact a few 2023 projects, but will be fully implemented in 2024

# New or Non-Standard Items

## New or specialty items

- On many projects, these can be a significant item (cost) in the overall project
- Inspection staff must take time PRIOR to this work to be familiar with item requirements and get answers/ clarification on any questions they may have with subject matter experts
  - ✓ Plan details
  - ✓ Special provisions
  - ❖ Manufacturer's requirements/ procedures

# Estimates

## Twice a month

- Contractors want to keep money flowing, limit interest cost
  - Cannot wait to pay their staff & suppliers
  - If they hold subcontractor payments, stains working relationship
  - Time is money ~ assume 6% simple interest to borrow money ~ 0.0164%/ day
    - ✓ For every \$100,000 borrowed, it costs the contractor roughly \$492/ month
  - ❖ Contractor also bears responsibility to submit required, complete documentation in a timely manner
  
- Asphalt Adjustments: If contractor makes a written request for partial payment of asphalt adjustment accrual [ $> \$10K$  or 12 months elapsed per 110.04(b)7], the request is to be granted and processed in a timely manner
  
- Diesel Adjustments: Quarterly basis [if  $> \$1,000$  per 110.12(c)4]

# Estimates

## Twice a month

- If an estimate would be low (but  $> \$1,000$ ) and you are wondering whether to bother processing it at the beginning or mid-month ~ **process the estimate**
- Okay if processing is off from the 1<sup>st</sup> or the 15<sup>th</sup> by a few days, but not a week or more



# **Joint IIC Council/ Design Quality Initiative**

# Joint IIC Council/ Design Quality Initiative

## **IIC Council Efforts:**

- Effort initiated during winter 21/22
- Initial Conclusions
  - While Construction AARs and Design Quality Surveys are completed on every project, Construction has not systematically inventoried/ grouped high priority issues and communicated productively with Design
  - Feedback from Construction to Design is at times broadly generalized and fails to provide designers with quality improvement items which are clear in detail or possibly even 'actionable'
  - Over-reaction to relatively minor issues that may have occurred on one project can lead to policy changes which impact and burden staff with additional steps and paperwork on every future project

# Joint IIC Council/ Design Quality Initiative

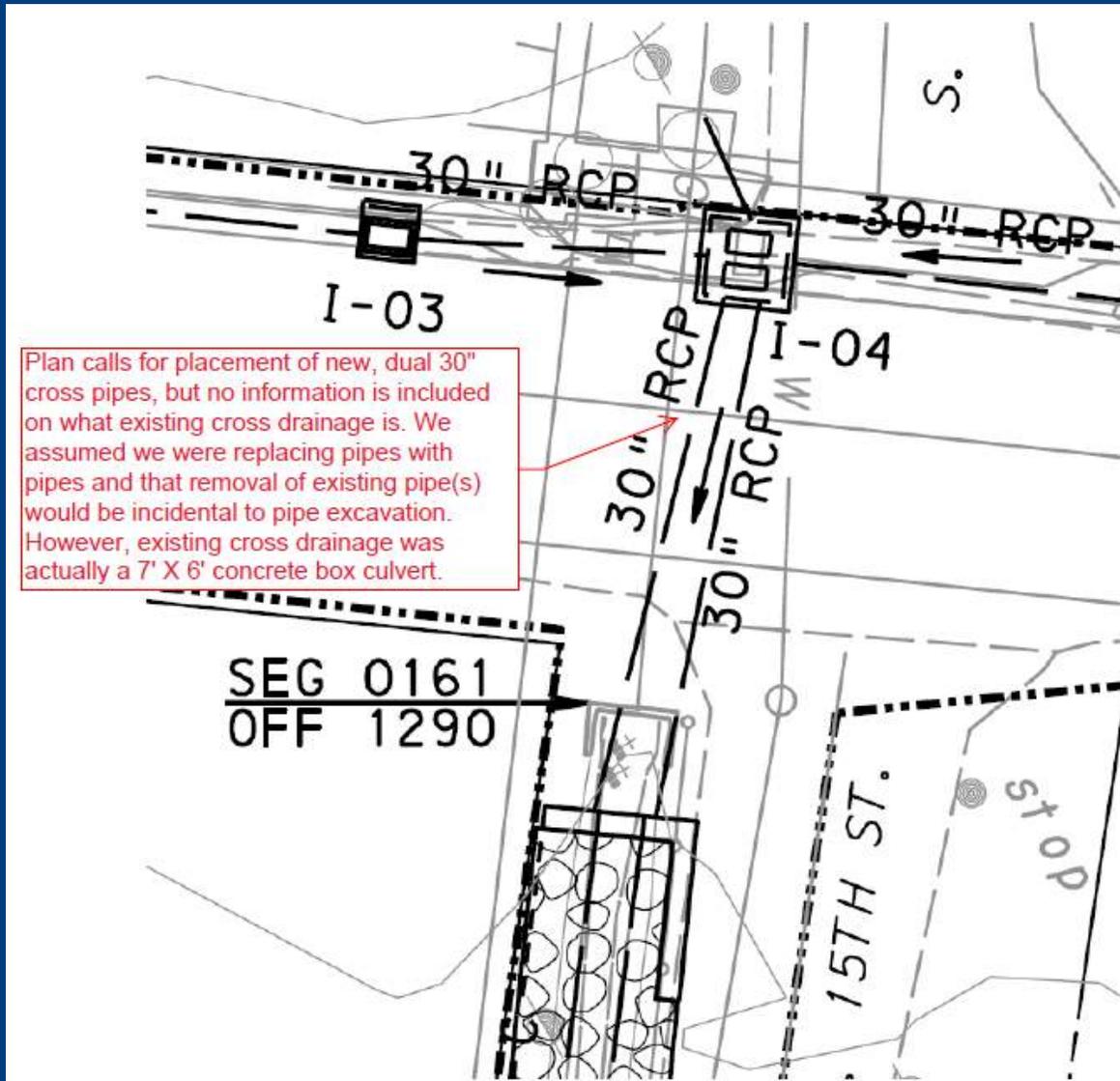
## **IIC Council Efforts (cont.):**

- Goal was to identify areas where opportunities for quality improvements may exist that would provide mutual benefit to both Design and Construction, focusing on:
  - Omissions, quantity shortfalls, missing items, inconsistencies, etc. that have been encountered on a repetitive basis
  - Major error or omissions which have occurred that result in major cost and/or time implications
  - Review limited to 2020 & 2021 construction seasons
- IIC Council sought input from all Construction IICs
- Based on input received along with review of work orders and time extensions, a 'Top 5' areas for improvement list was established
- IIC Quality Improvements Package was transmitted to Design Unit on February 11, 2022
  - Top 5 Improvement Opportunities
  - Examples of issue were included

# Joint IIC Council/ Design Quality Initiative

QUALITY PRIORITY RANK	FOCUS AREA	DESCRIPTION
1	Existing Drainage Verification	Existing drainage conditions vary from those depicted on the plans
2	Utility Verification	Field conditions vary from those depicted on the plans
3	Quantity Omissions - Inaccuracies	Quantities required but either not included or significantly under/over estimated
3A	<i>Tree Removals/ Trimming</i>	<i>Impacts to trees not adequately assessed</i>
3B	<i>Shoulder Back-Up</i>	<i>Shoulder back-up quantities significantly underestimated</i>
4	Penelec Outages	Reliance on scheduled power outages to facilitate work operations and lack of Penelec reliability to provide as scheduled (and lack of adequate advanced notice)
5	Not to Scale Drawings	Not to scale drawings result in layout issues in the field or missed conflicts/ issues

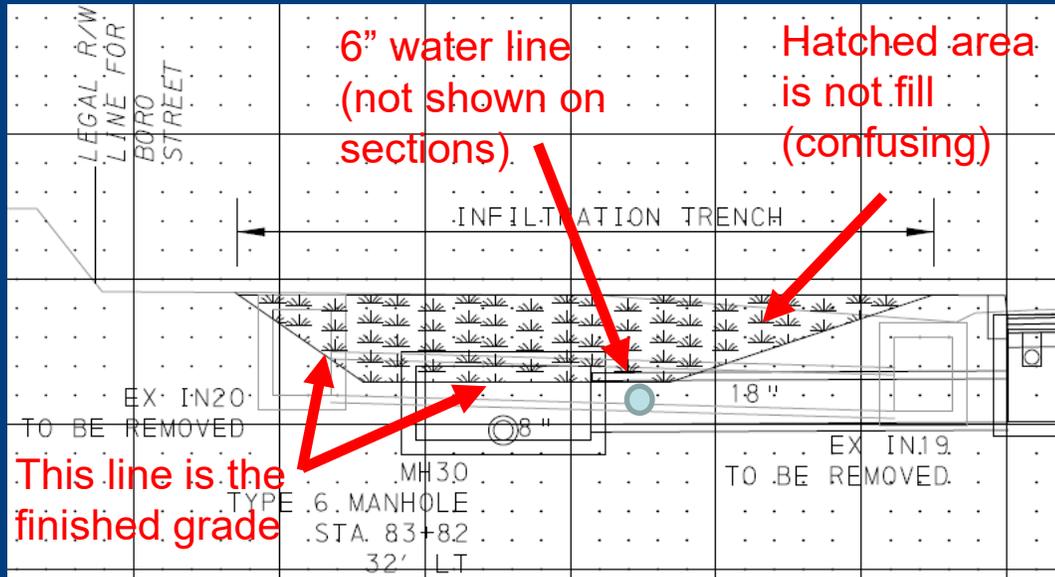
# DRAINAGE VERIFICATION



## EXAMPLE #3

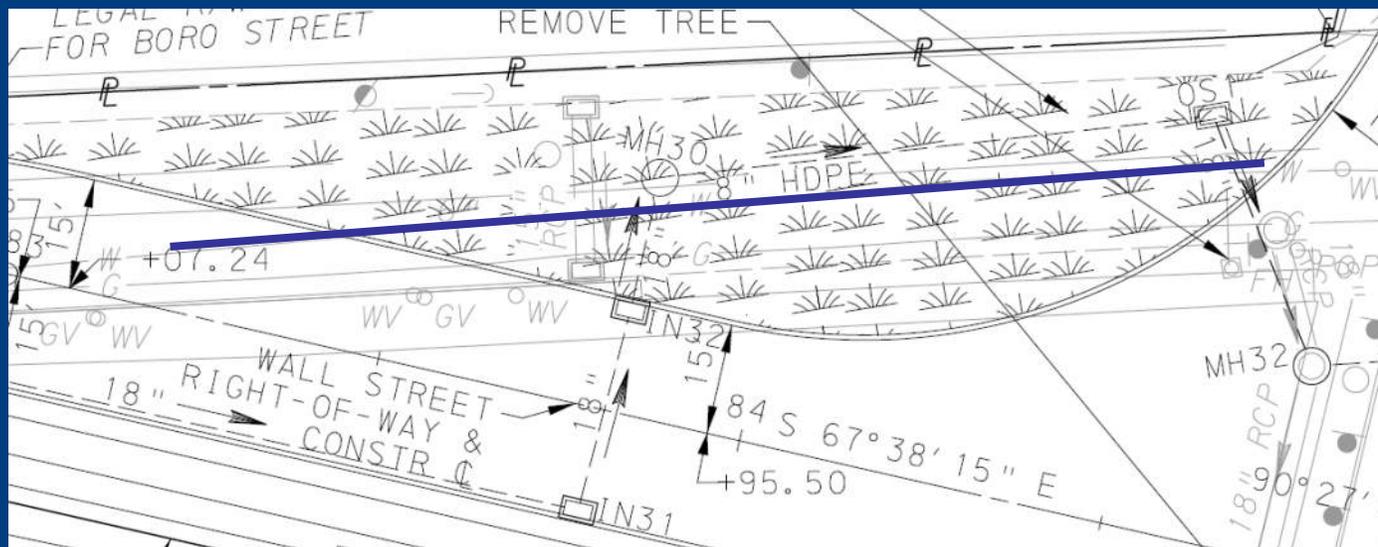
- Plans called to replace the existing cross drainage with two 30" pipes, but no call out indicating what existing cross drainage consisted of
- Existing cross drainage was found to be a 7' X 6' concrete box culvert
- Although removal of small existing pipes would be incidental to pipe excavation, structure demolition (i.e. ~ box demolition) is not incidental
- There was no item for structure demolition to remove the box
- Department had to add a demolition item with long-term traffic control to enable the work to be completed in a safe manner (Cost ~ \$27K , Delay ~ two weeks)

# UTILITY VERIFICATION



## EXAMPLE #1

- An existing 6" waterline is shown on the plan view, but not shown on the cross sections
- This waterline ended up being near the bottom of a new infiltration trench whereby the active waterline would be exposed/undermined during trench construction
- The waterline was also in conflict with an 18" pipe to be installed



- END RESULT: Waterline was relocated adding delay and cost to the project

# TREE REMOVALS



## EXAMPLE #4

- 3.6 mile long safety improvement project with resurfacing, guiderail, drainage, signing, signal, and bridge rehabs
- Contract includes item for tree trimming, but no tree removal
- Throughout corridor, there are numerous dead or dying trees leaning towards the roadway (majority within existing ROW)
- After NTP, coordinated with Maintenance and Environmental Units and identified 81 trees for removal due to safety concerns as well as an additional 1075 LF of tree trimming
- Work will need to be performed via force account, with a preliminary estimate of roughly \$100K

# TREE REMOVALS

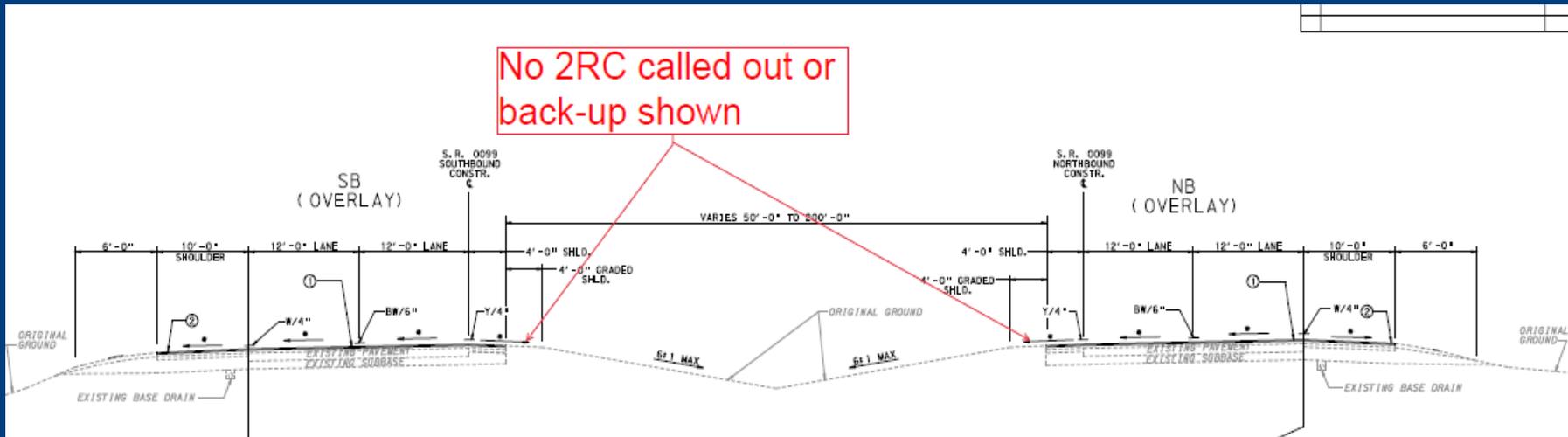
EXAMPLE #4  
(cont.)



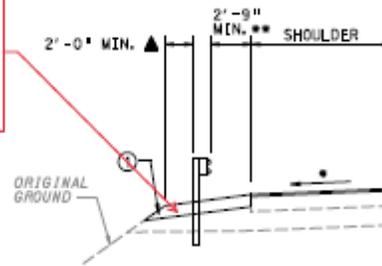
# SHOULDER BACK-UP

## EXAMPLE #2

- Project scope was for 1" thin lift overlay of four-lane
- No shoulder back-up was shown in median areas or included in back-up quantity computations
- Additional quantity of 2RC back-up added via work order at a cost of \$131K



Only location  
2RC was called  
out or tabbed  
(guiderail areas)



TYPICAL ROADWAY GUIDERAIL SECTION

NOT TO SCALE

# SHOULDER BACK-UP

## EXAMPLE #2 (cont.)

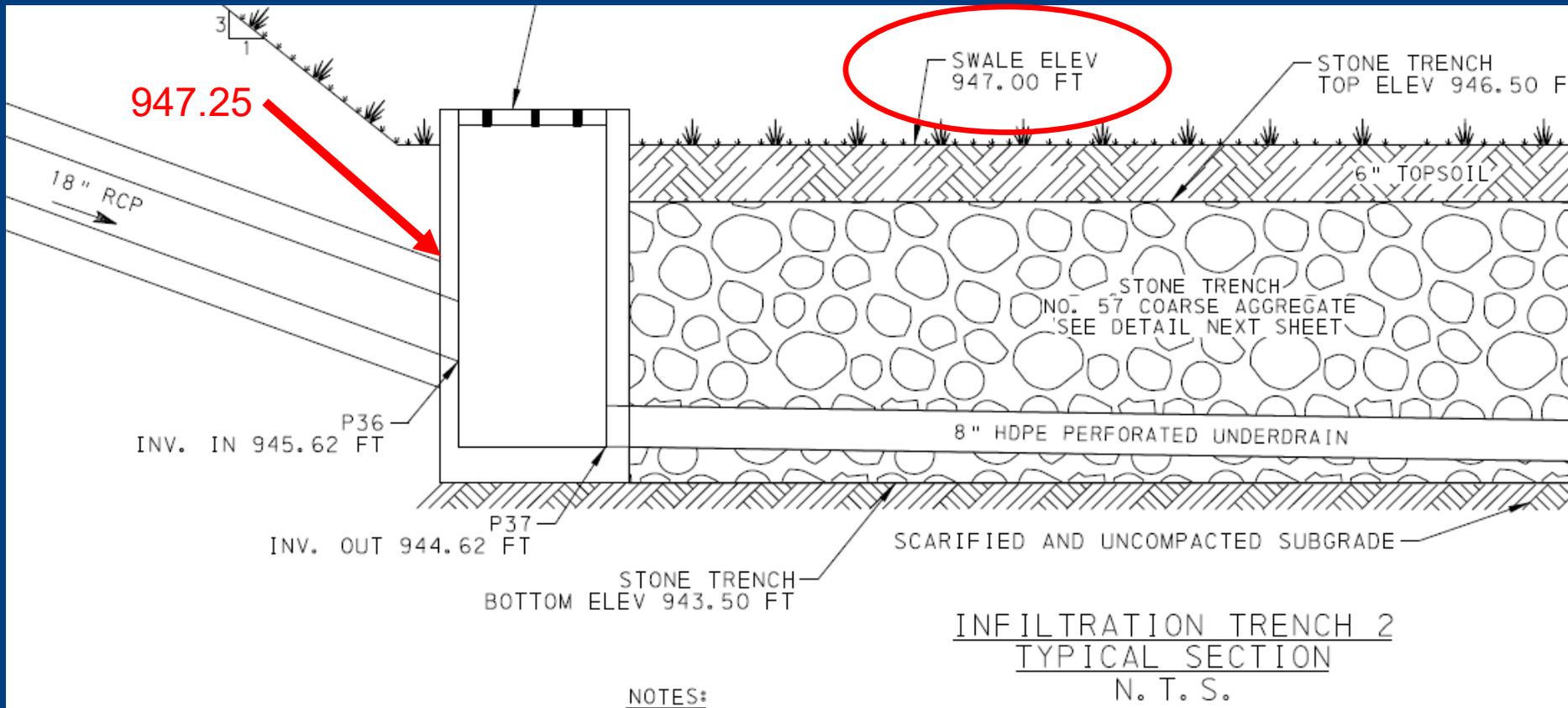
- Photo below represents final edge drop off in median before back-up placed
- Note that drop off is  $>1$ " thin lift depth due to drop-off condition being pre-existing ( $\sim 1.5$ " )



# NOT TO SCALE DRAWINGS

## EXAMPLE #1

- The top of this 18" pipe entering the manhole is 947.25 as designed (based on invert)
- The top of swale elevation is 947.00 as designed
- Therefore, top of pipe would be 3" above finished grade if constructed as designed
- This one issue affected multiple drainage locations and required drainage to be redesigned
- If the detail was drawn to scale, this issue would have been realized during drafting





# Questions???