STORMWATER / DRAINAGE CONSTRUCTION

INDY DPW / ACEC 2020 RPR TRAINING
2018 BLA PROJECT: SD-33-057E
BEAN CREEK DRAINAGE IMPROVEMENTS, AREA 6

FEBRUARY 5, 2020
**SCOPE:** HYBRID DITCH STORM IMPROVEMENTS (25 DRAINAGE LINES WITH MULTIPLE OUTLETS), ROADWAY RESURFACING

**LOCATION:** SE INDY RESIDENTIAL NEIGHBORHOOD (EMERSON AVE. & SE AVE. AREA)

**COST:** $1.715M (ENGINEERS ESTIMATE), $1.667M (BID), $1.711M (FINAL)

**UTILITIES:** CEG GAS, CEG WATER, IPL, AT&T RELOCATIONS

**DESIGNER:** ANGIE SMITH, P.E. WOOLPERT, INC.

**CLIENT / OWNER:** TODD WILSON INDY DPW PM / ADMINISTRATOR

**CONTRACTOR:** EAGLE VALLEY, INC.
PROBLEM – UTILITY PROGRESS

STARTED BEHIND SCHEDULE (LATE NTP / WORK PLAN APPROVAL)

LACK OF SUFFICIENT CREWS, EQUIPMENT, SLOW PROGRESS (SPENT ALMOST ENTIRE CONSTRUCTION SEASON FOR NEW 2” MAINS IN NEIGHBORHOOD); CONTRACTOR START DELAYED 3 MONTHS, COMPRESSED SCHEDULE FOR 2018 FINISH

SOLUTION

COORDINATED UTILITY RELOCATION WORK AND PROGRESS W/ EAGLE VALLEY CRITICAL PATH; FOCUSED UTILITIES IN AREAS WITH MINIMAL RELOCATION WORK THAT WOULD OPEN LARGER, MORE PRODUCTIVE AREAS FOR EAGLE VALLEY TO BUY TIME – TALK TO THE UTILITY CONTRACTORS, FIGURE OUT THEIR PROGRESSION
PROBLEM – UNFORESEEABLE CONFLICT (1/3)

FIRST DRAINAGE LINE PLANNED PROFILE / ALIGNMENT ON PROSPECT STREET CONFLICTED WITH UNDERGROUND FIBER (2011 SURVEY, 2018 CONSTRUCTION LIKELY A FACTOR)

SOLUTION

SUE (POT-HOLE SURVEY) TO CONFIRM VERTICAL CONFLICT; REROUTE DOWNSTREAM STRUCTURES OPPOSITE IMPASSABLE CONFLICT TO EX. RCP SYSTEM ON OPPOSITE SIDE OF ROAD
**PROBLEM – UNFORESEEABLE CONFLICT (2/3)**

(1/3) Took care of downstream structures; still have upstream segments that need to drain somewhere (ex. RCP system on opposite side of Prospect N/A)

**SOLUTION**

Soft planned profile grades allow drainage in opposite direction with minor inv. adjustment, ~100 LFT connection to another future line 6D/6C on Temperance Ave. (Lost some storage but same outlet ex. capacity); total savings $31,000... *but be careful rerouting or changing drainage due to capacity, outfall, etc....need to get ‘OK’ from designer*
PROBLEM – UNFORESEEABLE CONFLICT (3/3)

(1/3, 2/3) were first drainage lines of 25; shallow sanitary mains ahead via CEG as-built data provided (limited availability for lowerings or adjustments in conflict with alignments)

SOLUTION

Utility locate (horizontally), shoot down on clay laterals between structures, analyze planned profiles against conflict points (lots of issues found); revised profile grades (with some availability for lowerings where it made sense) for three drainage lines - $0 cost change (and it worked!)
TAKEAWAY(S) – UNFORESEEABLE CONFLICT

GET YOUR CONTRACTOR TO CALL IN THEIR 811’S EARLY (OR DO IT YOURSELF: INDIANA811.ORG OR JUST CALL “811”), LOOK AT THE PAINT & FLAGS….IF YOU FIND SOME UTILITIES MARKED THAT AREN’T SHOWN ON YOUR PLANS, YOU’VE LIKELY GOT A PROBLEM (OR AT LEAST THE DESIGNER DIDN’T KNOW OR ASSUME THEY WERE THERE)

REVIEW THE RELOCATION PLANS, WRAP YOUR HEAD AROUND WHAT THEY’RE SUPPOSED TO BE DOING (AND WHERE THAT’S SUPPOSED TO BE AT), CATCH BAD WORK / GRADES EARLY WHILE THEY’RE DOING IT….~80% OF OUR EXPERIENCE, UTILITY CONTRACTORS “MEASURE DOWN” VERSUS UTILIZING VERTICAL GRADE CONTROL (NOT GOOD)

GET A HOLD OF OLD SANITARY AS-BUILTS….CHECK HOW DEEP YOUR STORMWATER IMPROVEMENTS ARE RELATED TO HOW DEEP THE SANITARY SYSTEMS ARE; IF THE SANITARY FACILITIES ARE REALLY SHALLOW, MIGHT BE STUCK WITH CONFLICTING LATERALS

ISSUES ON DRAINAGE JOBS NEED TO BE FIGURED OUT EARLY; CLEAR A PATH FOR YOUR PROJECT
(IMPROVEMENT) – DRAINAGE LINE CUT SHORT

OUR PLANNED DRAINAGE LINE 61 FOR APPLE ST. (DEAD END) WAS TO TERMINATE JUST PRIOR TO THE END OF THE ROAD; LAST 2 PROPERTIES W/ SIGNIFICANT EX. DRAINAGE PROBLEMS WOULD NOT BE ADDRESSED BY PROJECT

SOLUTION

SHOT GRADES ON LAST DRIVEWAY TO ENSURE CLEARANCE, ADDED ONE NYOPLAST STRUCTURE (~100 LFT HYBRID DITCH FOR STORAGE TO COUNTER INCREASED RUNOFF AREA), ~80’ RCP UNDER LAST DRIVEWAY WITH END SECTION, GRADING TO GET WATER OFF PROPERTY INTO NEW SYSTEMS...TAKE OWNERSHIP OF YOUR JOB, AIM TO IMPROVE IT!
PROBLEM – RESURFACING SCOPE

PLANNED RESURFACING @ 5” DEPTH (PAVEMENT CORES APPROX. 5.5” IN DEPTH); ANTICIPATE EXCESSIVE SUBGRADE TREATMENT REPAIRS / UNDERCUTS (BLOW BUDGET)

SOLUTION

REDUCE RESURFACING DEPTH TO 1-1/2” GLOBALLY, UTILIZE SAVINGS FOR FULL DEPTH HMA REPAIRS IN SEVERELY DETERIORATED AREAS (REPAIR LAYOUT DONE BY VISUAL INSPECTION AND PROOF-ROLL ON GRADE); CHANGE ORDER +$12,500 FOR FIRST 4 ROADS (OF 8)

Jesse Combs, P.E.  
Director of IN Operations

Bean Creek Area 6

David Anderle, E.I.  
Construction Engineer / RPR
PROBLEM – RESURFACING (AGAIN)

AFTER UTILITY ROADWAY CUTS, CONSTRUCTION DAMAGE IN REMAINING AREAS, ROADS TOTALLY DESTROYED

SOLUTION

NEGOTIATE REDUCED HMA FULL DEPTH REPAIR COST BASED ON HIGHER VOLUME & BETTER PRODUCTIVITY FOR 5.5” HMA (UNIT PRICE DOWN FROM $183/TON BID TO $125/TON REVISED, BOTH INCL. EXCAVATION / REMOVAL)

WAS ONLY A +$10,000 CHANGE ORDER AFTER CREDITING MILLING AND OTHERWISE NECESSARY REPAIRS IDENTIFIED VIA PROOF-ROLL
TAKEAWAY – RESURFACING

CHECK OUT YOUR PAVEMENT CORES FROM THE GEOTECH REPORT OR CIB, COMPARE AGAINST YOUR RS SECTION(S); USUALLY HAVE THEM BUT IF NOT, CAN ALSO CHECK EX. PAVEMENT THICKNESS DURING ROADWAY CUTS FOR STORM SYSTEMS

FIGURE OUT WHAT KIND OF MATERIAL THE SUBGRADE / SUBBASE CONSISTS OF; SHOULD BE A FACTOR IN THE TYPE OF REPAIRS OR UNDERCUTS YOU MIGHT HAVE TO PLAN ON (TOUGH FOR DESIGNERS TO ANTICIPATE THIS); SUBGRADE TREATMENT METHODS MAY WORK GREAT IN ONE SCENARIO, EFFECTIVELY USELESS ON ANOTHER (DESIGNERS USUALLY ASSUME THE NEED TO BE CONSERVATIVE – IS NOT ALWAYS THE CASE)

USE YOUR EXPERIENCE & ALSO LISTEN TO CONTRACTORS; DON’T BE AFRAID TO RECOMMEND A CHANGE IF IT MAKES SENSE; IF YOU’RE NOT SURE, TALK TO A MORE EXPERIENCED RPR, ROADWAY ENGINEER OR YOUR PM AT YOUR FIRM
BEFORE / AFTER

SUBSTANTIAL COMPLETION DATE: 11/15/18
ACHIEVED: 11/20/18 (5 DAYS WAIVED BY DPW)

FINAL COST +2.64% OF BID; -0.2% OF ENG. EST.

Indy DPW/ACEC
RPR Training 2020

Stormwater
Drainage
Construction

Bean Creek Area 6

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Director of IN
Operations

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Construction
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BLA, Inc.
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