

UPGRADING AN AGING RAILYARD STORMWATER SYSTEM

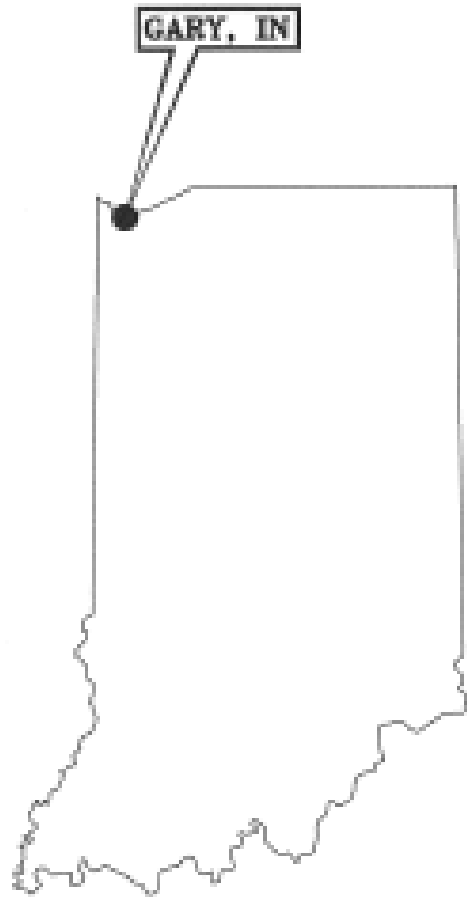


Railroad Environmental Conference 2016

November 1-2, 2016



PROJECT OVERVIEW & GOALS



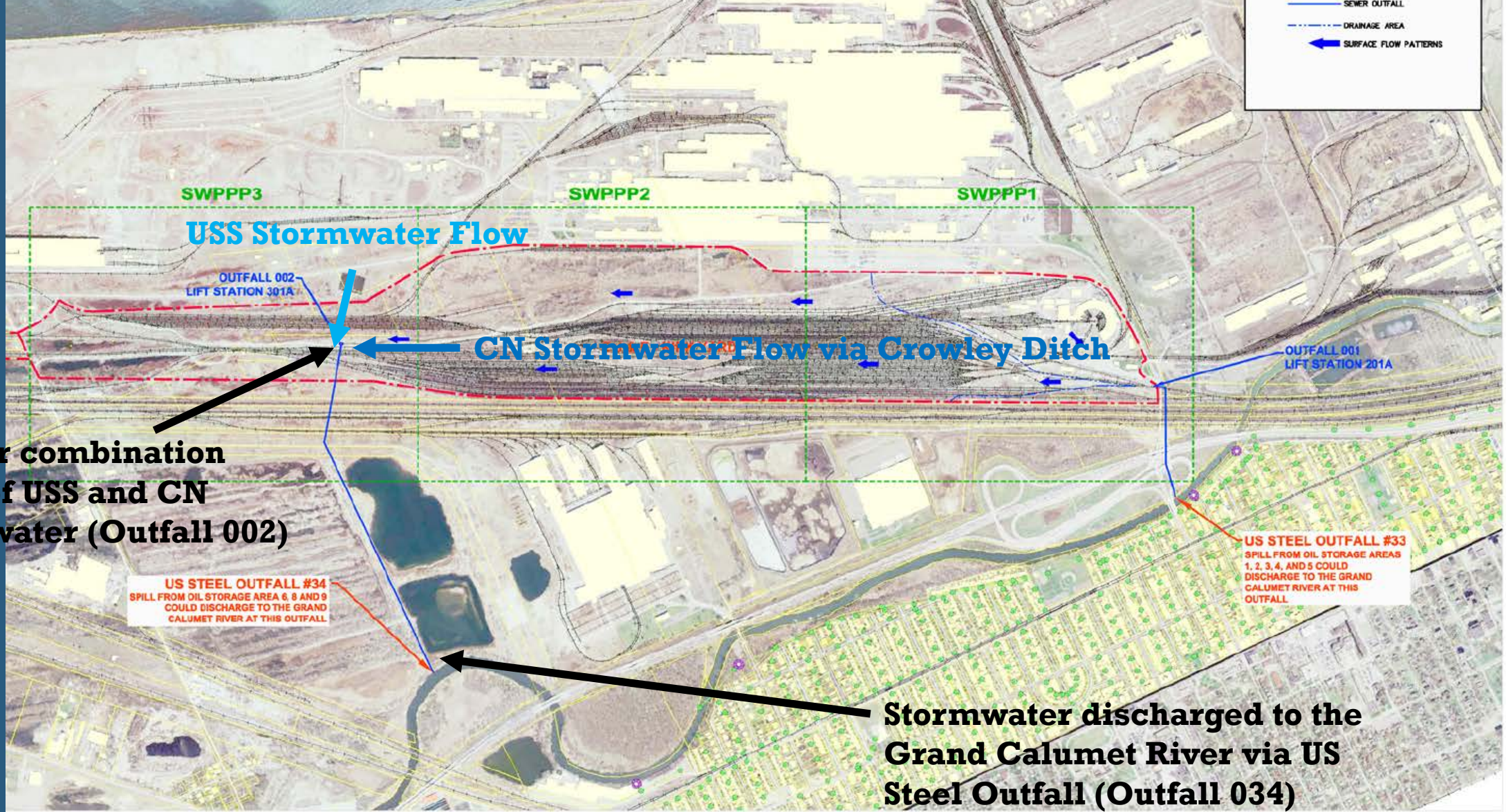
VICINITY MAP
N.T.S.



Existing Site Layout and Conditions

LEGEND

- - - FACILITY LIMITS
- SEWER OUTFALL
- - - DRAINAGE AREA
- ← SURFACE FLOW PATTERNS

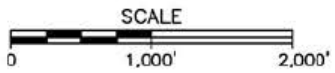


Former combination point of USS and CN stormwater (Outfall 002)

US STEEL OUTFALL #34
SPILL FROM OIL STORAGE AREA 6, 8 AND 9 COULD DISCHARGE TO THE GRAND CALUMET RIVER AT THIS OUTFALL

US STEEL OUTFALL #33
SPILL FROM OIL STORAGE AREAS 1, 2, 3, 4, AND 5 COULD DISCHARGE TO THE GRAND CALUMET RIVER AT THIS OUTFALL

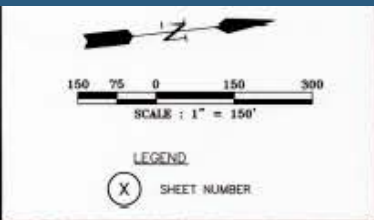
Stormwater discharged to the Grand Calumet River via US Steel Outfall (Outfall 034)



		TITLE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) FACILITY PLAN VIEW				
		CLIENT EJ&E KIRK YARD 1 BUCHANAN STREET, GARY INDIANA	DRWN BEB	CHKD JBD	REVD BY REVISION DATE	APPVD BY DATE

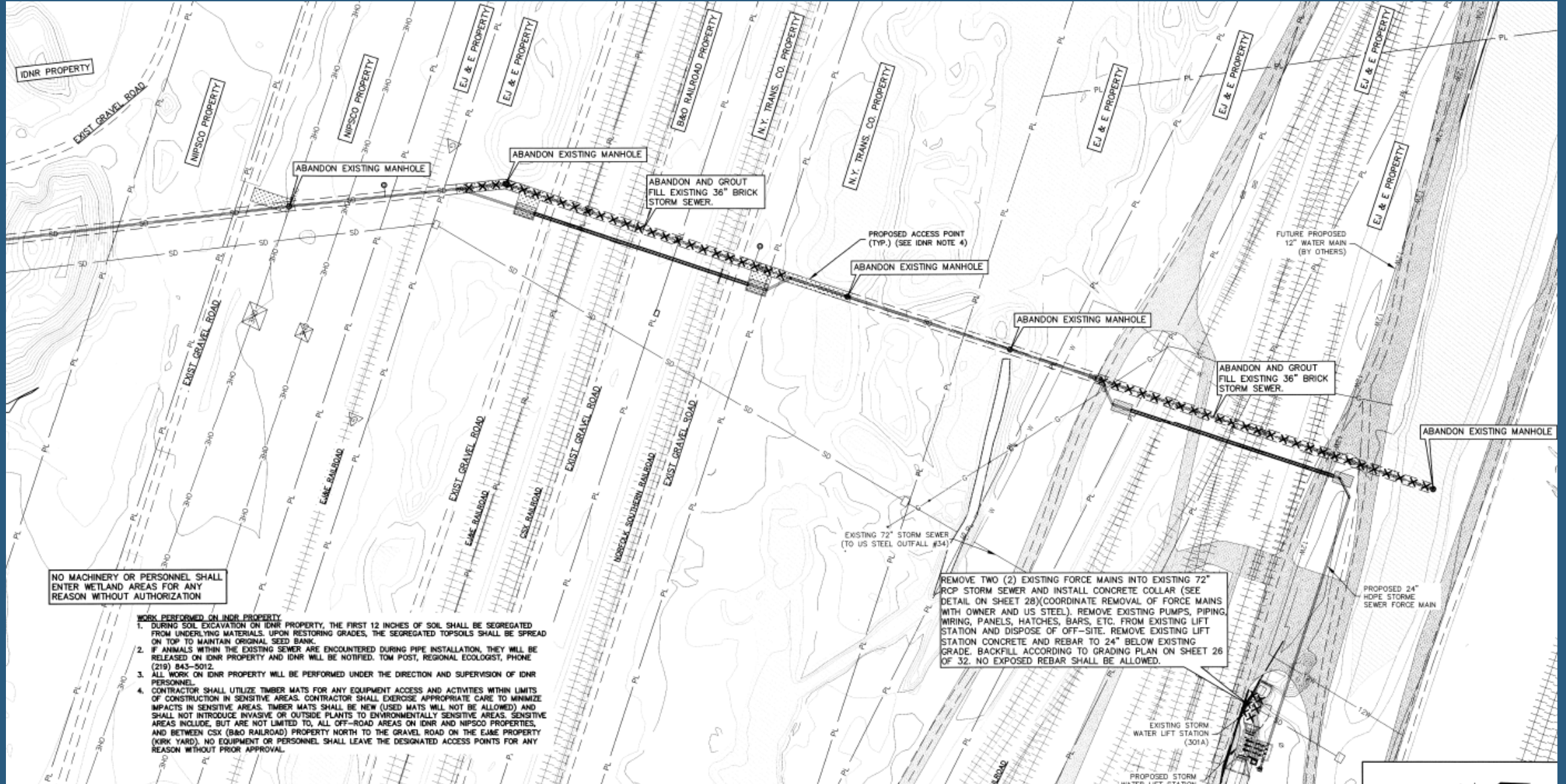
SELECTED DESIGN

New lift station & jack & bore (under RR tracks) + slip-line (sensitive areas) + open-cut



SELECTED DESIGN

DEMOLISH EXISTING LIFT STATION & ABANDON BRICK SEWER UNDER RR TRACKS



NO MACHINERY OR PERSONNEL SHALL ENTER WETLAND AREAS FOR ANY REASON WITHOUT AUTHORIZATION

- WORK PERFORMED ON IDNR PROPERTY**
1. DURING SOIL EXCAVATION ON IDNR PROPERTY, THE FIRST 12 INCHES OF SOIL SHALL BE SEGREGATED FROM UNDERLYING MATERIALS. UPON RESTORING GRADES, THE SEGREGATED TOPSOILS SHALL BE SPREAD ON TOP TO MAINTAIN ORIGINAL SEED BANK.
 2. IF ANIMALS WITHIN THE EXISTING SEWER ARE ENCOUNTERED DURING PIPE INSTALLATION, THEY WILL BE RELEASED ON IDNR PROPERTY AND IDNR WILL BE NOTIFIED. TOM POST, REGIONAL ECOLOGIST, PHONE (219) 843-5012.
 3. ALL WORK ON IDNR PROPERTY WILL BE PERFORMED UNDER THE DIRECTION AND SUPERVISION OF IDNR PERSONNEL.
 4. CONTRACTOR SHALL UTILIZE TIMBER MATS FOR ANY EQUIPMENT ACCESS AND ACTIVITIES WITHIN LIMITS OF CONSTRUCTION IN SENSITIVE AREAS. CONTRACTOR SHALL EXERCISE APPROPRIATE CARE TO MINIMIZE IMPACTS IN SENSITIVE AREAS. TIMBER MATS SHALL BE NEW (USED MATS WILL NOT BE ALLOWED) AND SHALL NOT INTRODUCE INVASIVE OR OUTSIDE PLANTS TO ENVIRONMENTALLY SENSITIVE AREAS. SENSITIVE AREAS INCLUDE, BUT ARE NOT LIMITED TO, ALL OFF-ROAD AREAS ON IDNR AND NIPSCO PROPERTIES, AND BETWEEN CSX (B&O RAILROAD) PROPERTY NORTH TO THE GRAVEL ROAD ON THE EJ&E PROPERTY (KIRK YARD). NO EQUIPMENT OR PERSONNEL SHALL LEAVE THE DESIGNATED ACCESS POINTS FOR ANY REASON WITHOUT PRIOR APPROVAL.

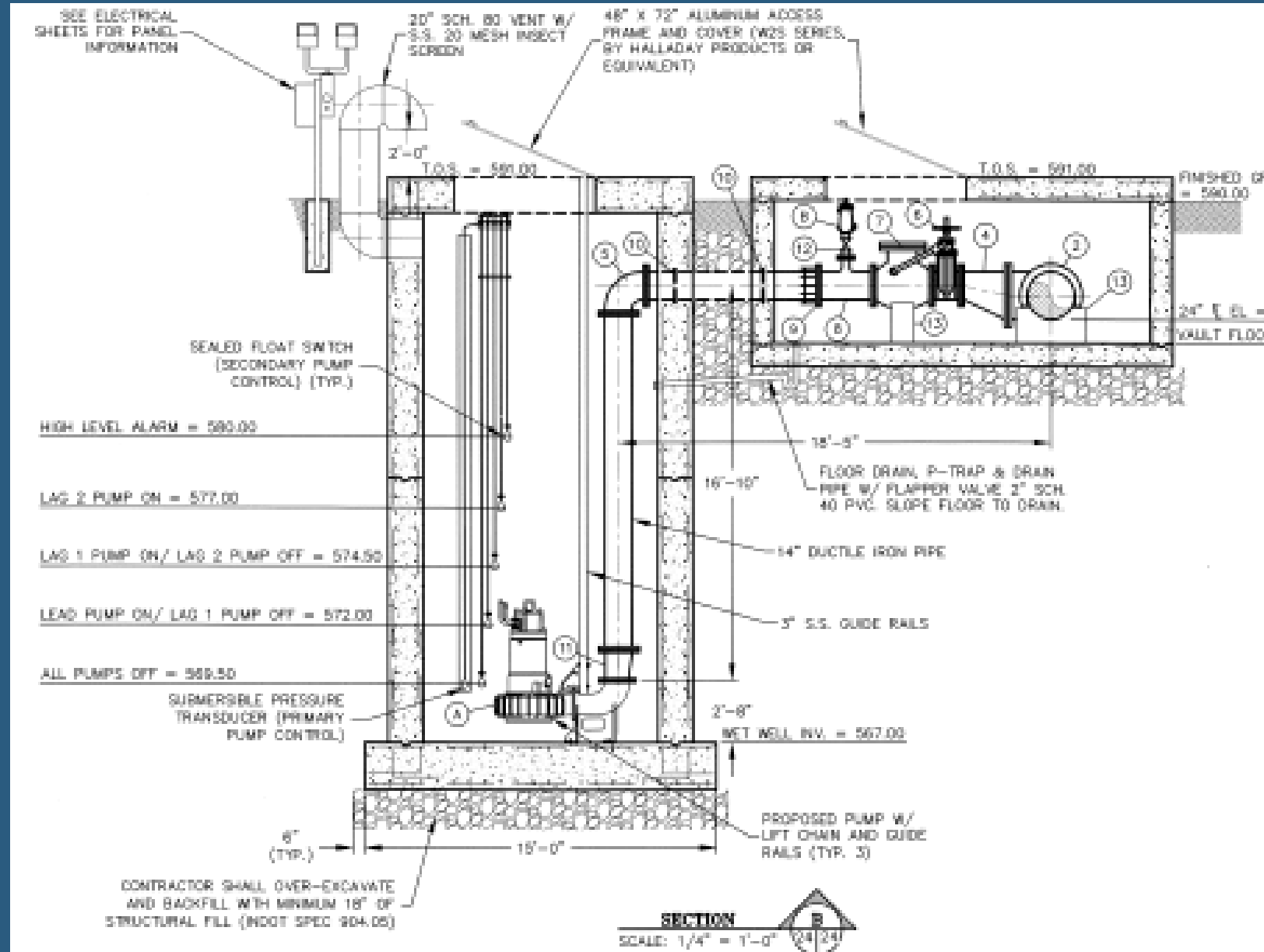
REMOVE TWO (2) EXISTING FORCE MAINS INTO EXISTING 72" RCP STORM SEWER AND INSTALL CONCRETE COLLAR (SEE DETAIL ON SHEET 28)(COORDINATE REMOVAL OF FORCE MAINS WITH OWNER AND US STEEL). REMOVE EXISTING PUMPS, PIPING, WIRING, PANELS, HATCHES, BARS, ETC. FROM EXISTING LIFT STATION AND DISPOSE OF OFF-SITE. REMOVE EXISTING LIFT STATION CONCRETE AND REBAR TO 24" BELOW EXISTING GRADE. BACKFILL ACCORDING TO GRADING PLAN ON SHEET 26 OF 32. NO EXPOSED REBAR SHALL BE ALLOWED.

PERMITTING – ACOE, IDNR, IDEM, GSWMD, LAKE COUNTY

- Army Corps of Engineers
 - <0.1 acre impact to Crowley Ditch
 - Use of coffer dam for outfall construction at Grand Calumet River
- IDNR
 - Disturbance limits in Nature Preserve
 - Plans for handling of fly ash; slip-line contingency plan
 - Restoration requirements
- IDEM Rule 5 (SWPPP)
- Gary Storm Water Management District (SWPPP)
- Lake County (SWPPP)

LIFT STATION DESIGN

- (3) 35-hp submersible pumps
- Cast-in-place concrete wet well
- 23' deep wet well
- Cast-in-place concrete valve vault
- Pre-fabricated oil-monitoring building



LIFT STATION CONSTRUCTION



Sheet pile coffer dam and dewatering



Completed excavation and subgrade preparation

LIFT STATION CONSTRUCTION



Wet well near complete; preparing subgrade for inlet channel



Completed lift station with rip-rap lined channel inlet, trash grate, and electrical control panels

JACK & BORE - CONSTRUCTION



Dewatering along pipe alignment to prevent running sand during bore



Pilot bore using the Ackerman Guided Boring System

JACK & BORE - CONSTRUCTION



Pilot rod welded to steel casing



Jack & bore of the steel casing

JACK & BORE – CONSTRUCTION (UTILITIES)



Potholing utilities with vacuum truck and surveying elevation



Abandoned water line (unmarked) – hit during jack and bore (view from inside of steel casing)

SLIP LINE – CONSTRUCTION (PREPARATION)



Nozzle head for high-pressure water jet cleaning brick sewer



Using water jet and vacuum truck to clean brick sewer

SLIP LINE – CONSTRUCTION



Brick sewer side view during nozzle retrieval (note groundwater and mortar conditions)



Reaming head connected to liner pipe, ready to pull into entry pit

SLIP LINE – CONSTRUCTION



Slip line segment completed
(~600')



Assisting slip line with excavator to overcome
underground debris

SLIP LINE – CONSTRUCTION



Contingency plan: excavate and remove obstruction



Using electro-fusion coupling to connect liner pipe at obstruction

OPEN CUT TRENCH CONSTRUCTION



Placing and grading stone bedding at bottom of trench



Removal of brick sewer top and sides, and placing stone bedding (fly ash placed on Visqueen and covered)

OPEN CUT TRENCH CONSTRUCTION



Loading and hauling off fly ash encountered during trenching



Open-cut installation: 45° bends, avoiding existing utilities, and tee-fitting for air-release valve

OUTFALL HEADWALL CONSTRUCTION



Installation of the sheet pile
cofferdam



Installation of the flap gate on the outfall headwall

EROSION CONTROL BMPS



Installation of silt fence (following trench cut)



Installation of erosion control netting along Crowley Ditch slopes

EROSION CONTROL BMPS



Dewatering filter basin: geotextile filter bag set inside straw bale basin lined with additional geotextile



Dewatering filter basin

RESTORATION – SALVAGE OF NATIVE PLANTS



Identify areas of sensitive plant species to be salvaged



Excavate sensitive plants with root system intact

RESTORATION – SALVAGE OF NATIVE PLANTS



Some plants were staged on geotextile to allow for trenching to be completed and backfilled



Placement, backfill, and watering of transplants

RESTORATION – FINAL SEEDING



Hydro-seeding and mulching temporary cover crop



Drill seeding permanent native seed

CONCLUSIONS

- New lift station with (3) 35-hp pumps
- Approximately 4,400' of underground 24" sewer pipe
 - 2,180' via open-cut
 - 1,725' via slip-line
 - 495' via jack & bore
- New independent outfall to Grand Calumet River
- (12) underground utility crossings
- (4) outside property crossings
- (16) track crossings – (4) mainline tracks and (12) yard tracks
- Minimal impact to sensitive habitat and enhanced areas of the INDNR property
- Project is in Year 1 (2016) of a 3-year minimum monitoring and management plan – CN continues to work closely with the InDNR to manage impacts



First discharge at new outfall to Grand Calumet River