

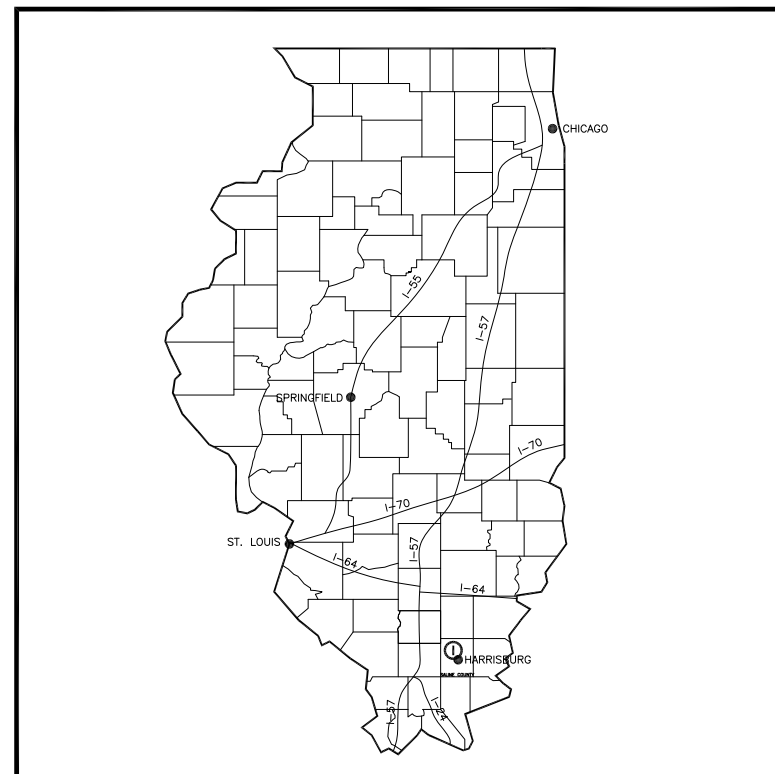
LETTING ITEM NO. 07A  
MARCH 8, 2019 LETTING

# CONSTRUCTION PLANS

HA030  
TOTAL SHEETS: 11

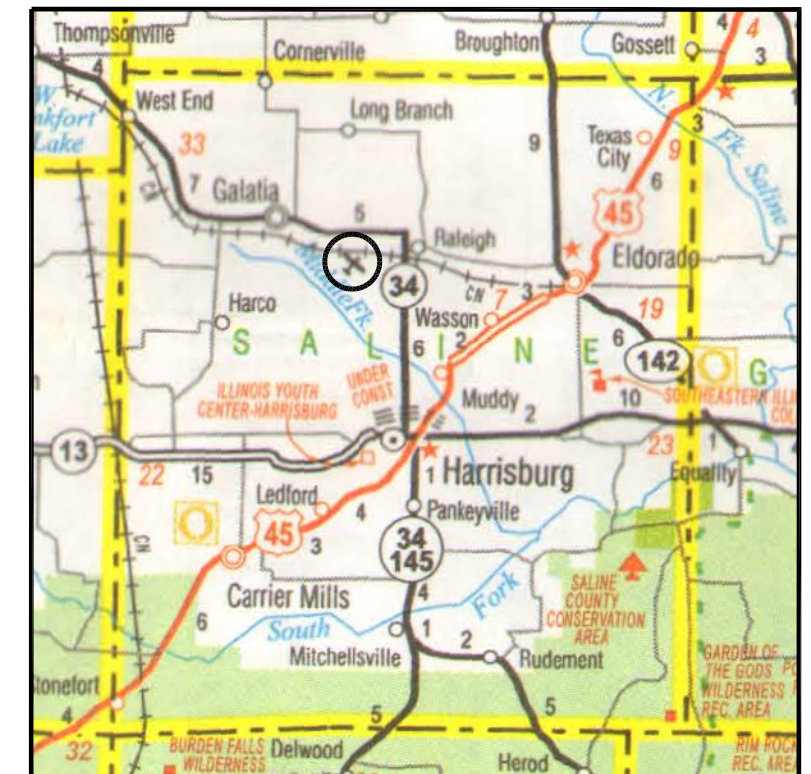
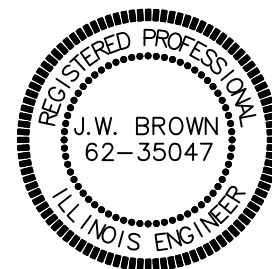
# FOR HARRISBURG-RALEIGH AIRPORT

## REHABILITATE AIRFIELD STORM SEWER SYSTEM



ILLINOIS PROJECT NUMBER: HSB-4670  
SBG PROJECT NUMBER: 3-17-SBGP-144

HARRISBURG, ILLINOIS  
SALINE COUNTY  
JANUARY 11, 2019



VICINITY MAP

BROWN AND ROBERTS, INC.  
CONSULTING ENGINEER  
PRESIDENT  
SUBMITTED BY: *Jim W. Brown*  
JIM W. BROWN, PRESIDENT  
DATE SUBMITTED: 01/11/2019  
LICENSE NUMBER: 062-035047  
LICENSE EXPIRATION DATE: NOVEMBER 30, 2019

PLANS PREPARED BY:  
  
BROWN AND ROBERTS, INC.  
1 WESTRIDGE ROAD  
HARRISBURG, IL. 62946  
(618) 252-8111

HARRISBURG RALEIGH AIRPORT AUTHORITY  
CHAIRMAN  
APPROVED BY: *Brad Henshaw* 1/11/19  
BRAD HENSHAW DATE  
SECRETARY  
ATTESTED BY: *Ken Wallace*  
KEN WALLACE DATE 1/11/19

GENERAL NOTES

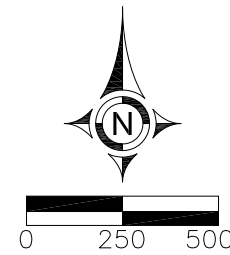
1. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, EQUIPMENT, AND TRANSPORTATION NECESSARY TO CONSTRUCT ALL ELEMENTS OF THE PROJECT AS DESCRIBED IN THE CONSTRUCTION PLANS AND SPECIFICATIONS.
2. THE RULES, REGULATIONS, AND SPECIFICATIONS ENUMERATED HEREIN SHALL BE CONSIDERED AS MINIMUM REQUIREMENTS. THEY SHALL NOT PROHIBIT THE CONTRACTOR FROM FURNISHING AND INSTALLING HIGHER GRADES OF MATERIAL THAN ARE SPECIFIED HEREIN.
3. THE CONSTRUCTION ENTRANCE AS SHOWN ON THE SAFETY PLAN IS ONLY TO BE USED FOR THIS PROJECT. ACCESS TO THE PROJECT FOR ALL HAULING OF MATERIALS AND EQUIPMENT SHALL BE RESTRICTED TO THE DESIGNATED CONSTRUCTION ENTRANCE AND HAUL ROUTE. ACCESS TO THE WORK AREAS FROM THE STAGING AREA SHALL BE COORDINATED WITH THE RESIDENT ENGINEER AND AIRPORT MANAGEMENT.
4. THE CONTRACTOR SHALL PROVIDE AN ESCORT (WITH A RADIO) WHEN REQUESTED BY THE RESIDENT ENGINEER.
5. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT, PRESERVE, AND REPAIR THE EXISTING AIRFIELD AND ROADWAY PAVEMENTS AT ALL TIMES. THE CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING ELECTRICAL, DRAINAGE, AND PAVEMENT STRUCTURES AT NO ADDITIONAL COST TO THE CONTRACT.
6. NO EQUIPMENT SHALL BE PERMITTED TO CROSS OR USE ANY EXISTING PAVEMENT OUTSIDE THE CONSTRUCTION LIMITS, GENERAL PROJECT AREA OR ACCESS ROUTE.
7. CONTRACTOR IS REQUIRED TO PROVIDE THEIR OWN RESTROOM FACILITIES.
8. UNLESS OTHERWISE NOTED, ALL DISTURBED AREAS OUTSIDE OF THE PROPOSED CONSTRUCTION LIMITS SHALL BE GRADED, SEEDED AND/OR HYDROMULCH SEEDED AT NO ADDITIONAL COST TO THE CONTRACT.
9. ALL WASTE MATERIAL SHALL BE HAULED FROM THE AIRPORT AND PROPERLY DISPOSED OF UNLESS OTHERWISE SPECIFIED HEREIN.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING PERMITS FOR HAULING ON PUBLIC ROADS, AS APPLICABLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING ANY DAMAGES TO ANY PAVEMENTS (PUBLIC OR PRIVATE) CAUSED BY HIS/HER CONSTRUCTION EQUIPMENT OR PERSONNEL.
11. THE OWNER SHALL HAVE THE RIGHT OF FIRST REFUSAL FOR ALL SALVAGEABLE MATERIAL REMOVED ON THE PROJECT.
12. CONTRACTOR SHALL NOTE THAT ALL AREAS WITHIN THE AIRPORT PROPERTY LINE AND OUTSIDE THE CONSTRUCTION LIMITS MAY BE USED FOR AGRICULTURAL PURPOSES. THE CONSTRUCTION LIMITS SHALL BE RESTRICTED TO AREAS THAT ARE ABSOLUTELY NECESSARY TO DISTURB TO COMPLETE THE REQUIRED WORK ITEMS. LIMITS SHALL BE COORDINATED WITH THE RESIDENT ENGINEER PRIOR TO BEGINNING ANY WORK. ALL AREAS WHICH HAVE BEEN FARMED AND/OR DESIGNATED TO BE FARMED AFTER THE PROJECT COMPLETION, AND HAVE BEEN DISTURBED BY CONSTRUCTION ACTIVITY, SHALL BE CHISEL PLOWED (36" MAX) OR OTHERWISE SCARIFIED TO RETURN THE AREA TO A REASONABLE TILLABLE CONDITION (IF SO PERMITTED BY THE AIRPORT MANAGER.)
13. CONTRACTOR SHALL RESTORE TO ORIGINAL CONDITION ALL GRASS, STONE, OR PAVEMENT DISTURBED BY CONTRACTOR'S CONSTRUCTION OPERATIONS, STAGING, AND CONSTRUCTION ACCESS ROUTES. DISTURBED AREAS TO BE REPAIRED, GRADED, AND MULCHED & SEEDED UNLESS OTHERWISE NOTED. STAGING AREA AND SITE ACCESS RESTORATION WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
14. THE PROJECT PAY ITEMS ARE INTENDED TO BE INCLUSIVE OF ALL WORK TO BE PERFORMED AS SHOWN IN THESE PLANS. ALL INCIDENTAL WORK REQUIRED TO COMPLETE THE PROJECT TO THE SATISFACTION OF THE RESIDENT ENGINEER IS TO BE INCLUDED IN THE COSTS OF PERFORMING THESE ITEMS.
15. APPROXIMATE LOCATIONS OF UNDERGROUND UTILITIES ARE SHOWN THROUGHOUT THESE PLANS. THE CONTRACTOR SHALL DETERMINE EXACT LOCATIONS AND PROTECT THESE UTILITIES DURING CONSTRUCTION. ANY UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE PROPER PERSONS FOR THE PURPOSE OF LOCATING AND PROTECTING EXISTING UNDERGROUND UTILITIES.
16. THE CONTRACTOR MUST AT ALL TIMES MAINTAIN PROPER DRAINAGE FOR ALL AREAS AFFECTED BY HIS WORK, TO INCLUDE PIPE CULVERT(S) FOR HAUL/ACCESS ROUTE IF NECESSARY.
17. ANY FENCING OR FENCE POST REMOVAL ON ACCESS ROUTE NECESSARY FOR EQUIPMENT TO ACCESS THE PROJECT AREA SHALL BE REMOVED AND REPLACED AT THE EXPENSE OF THE CONTRACTOR.

INDEX OF SHEETS	
SHEET NUMBER	DESCRIPTION
1	COVER SHEET
2	SUMMARY OF QUANTITIES, INDEX OF SHEETS AND GENERAL NOTES
3	CONSTRUCTION SAFETY & PHASING PLAN
4	AERIAL SITE PLAN
5	INSERTION LINING PLAN AND PROFILE 1
6	STORM SEWER REHABILITATION PLAN AND PROFILE 1
7	STORM SEWER REHABILITATION PLAN AND PROFILE 2
8	STORM SEWER REHABILITATION PLAN AND PROFILE 3
9	INSERTION LINER PIPE TYPICAL DETAILS 1
10	INSERTION LINER PIPE TYPICAL DETAILS 2
11	INSERTION LINER PIPE TYPICAL NOTES 1

SUMMARY OF QUANTITIES			
ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTAL QUANTITY
AR150520	MOBILIZATION	L.S.	1
AR152411	UNCLASSIFIED EXCAVATION	L.S.	1
AR156514	DITCH CHECK	L.F.	100
AR156520	INLET PROTECTION	EACH	6
AR156531	EROSION CONTROL BLANKET	S.Y.	3000
AR156550	RIPRAP	TON	150
AR701318	18" RCP, CLASS II	L.F.	315
AR701324	24" RCP, CLASS II	L.F.	350
AR751943	ADJUST MANHOLE	EACH	1
* AR801259	12" CIPP	L.F.	260
* AR801260	15" CIPP	L.F.	800
* AR801261	24" CIPP	L.F.	365
AR801262	GROUT REPAIR OF 66" CMP	L.S.	1
* AR801263	INSERTION LINING OF 66" CMP	L.F.	550
AR801264	INSERTION LINER GROUTING	L.S.	1
AR901510	SEEDING	ACRE	2
AR908510	MULCHING	ACRE	2

ADDITIVE ALTERNATE #1			
AS801265	ENTRANCE ROAD CULVERT REPLACEMENT	L.S.	1

\* DENOTES A SPECIALTY ITEM



**SCOPE OF WORK**

THE PROJECT SCOPE CONSISTS OF THE REHABILITATION OF THE AIRFIELD STORM SEWER SYSTEM AND OTHER NECESSARY AND RELATED WORK.

**PROPOSED SAFETY PLAN**

GENERAL- THE HARRISBURG-RALEIGH AIRPORT AUTHORITY CURRENTLY HAS A PAVED RUNWAY 6-24 WHICH IS 5013 FT. x 75 FT. AND A PAVED RUNWAY 14-32 WHICH IS 2820 FT. x 75 FT.

THE CONTRACTOR SHALL SUBMIT A SAFETY PLAN COMPLIANCE DOCUMENT (SPCD) CONFIRMING COMPLIANCE WITH THE CONSTRUCTION SAFETY PHASING PLAN (CSPP) PRIOR TO THE ISSUANCE OF THE NOTICE TO PROCEED AS SPECIFIED IN FAA AC 150/5370-2G.

**CONTRACTOR'S RESPONSIBILITIES**

**IDENTIFICATION-** THE CONTRACTOR'S VEHICLES AND EQUIPMENT SHALL BE PROPERLY MARKED WITH 3-FOOT SQUARE INTERNATIONAL ORANGE AND WHITE CHECKERED FLAGS ANYTIME THEY ARE ON AIRPORT PROPERTY.

THE CONTRACTOR AND HIS EMPLOYEES SHALL BE RESTRICTED TO THE WORK AREA.

**EQUIPMENT PARKING AND STORAGE-** THE CONTRACTOR'S EQUIPMENT PARKING, STORAGE, AND EMPLOYEE PARKING WILL BE AT THE LOCATION SHOWN ON THIS SHEET. ONLY CONTRACTOR VEHICLES AND EQUIPMENT REQUIRED FOR CONSTRUCTION WILL BE ALLOWED OUTSIDE THIS AREA.

**BARRICADES AND TRAFFIC CONES -** IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PLACE AND MAINTAIN BARRICADES AND TRAFFIC CONES AS REQUIRED AND AS DIRECTED BY THE RESIDENT ENGINEER. BARRICADES WILL BE LIGHTED WITH RED FLASHING LIGHTS. BARRICADES, THEIR MAINTENANCE, PLACEMENT, AND REMOVAL WILL BE CONSIDERED AS AN INCIDENTAL ITEM TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

THE CONTRACTOR WILL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE TO EXISTING PAVEMENTS CAUSED BY HIS PERSONNEL OR EQUIPMENT.

NONCOMPLIANCE WITH CONTRACTOR'S APPROVED SAFETY PLAN MAY RESULT IN FINES AS ALLOWED BY LAW.

**HAUL ROUTE AND EQUIPMENT PARKING**

THE CONTRACTOR WILL USE THE DESIGNATED HAUL ROUTE AND EQUIPMENT PARKING AREA SHOWN ON THIS SAFETY PLAN. THE PROPOSED EQUIPMENT PARKING AREA WILL BE APPROXIMATELY 75-FT BY 150-FT. THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN THE PROPOSED HAUL ROUTE AND PARKING AREA THROUGHOUT THE COURSE OF THE PROJECT. AT THE CONCLUSION OF THE PROJECT, ALL AREAS DISTURBED WILL BE RESTORED AS NEEDED TO ITS ORIGINAL STATE. RESTORATION OF THE HAUL ROUTE AND EQUIPMENT PARKING AREA WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

**UTILITY NOTE**

THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES AND ORGANIZATIONS THAT HAVE LINES OR CONDUITS IN THE PROPOSED WORK AREA. ALL LINES AND CONDUITS SHALL BE LOCATED AND IDENTIFIED FOR DEPTH BEFORE ANY EXCAVATION BEGINS. THE CONTRACTOR SHALL CALL JULIE (1-800-892-0123) TO ACCOMPLISH THESE REQUIREMENTS. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING ALL NON-JULIE UTILITIES LOCATED WITHIN THE PROPOSED CONSTRUCTION LIMITS. THESE UTILITIES ARE TO BE LOCATED PRIOR TO THE START OF CONSTRUCTION.

**J.U.L.I.E. INFORMATION**

COUNTY.....SALINE  
 CITY.....HARRISBURG (5 MI NORTH)  
 TOWNSHIP.....RALEIGH  
 SECTION NO.....21  
 NEAREST MAJOR ROAD INTERSECTION...ILLINOIS RT. 34 & AIRPORT DRIVE  
 AIRPORT ADDRESS...HARRISBURG-RALEIGH AIRPORT  
 PO BOX 33  
 HARRISBURG, IL 62946

**HEIGHT OF CONSTRUCTION EQUIPMENT**

THE MAXIMUM ANTICIPATED HEIGHT OF THE CONSTRUCTION EQUIPMENT IS 20 FEET. THE TALLEST EQUIPMENT IS EXPECTED TO BE A SEMI-TRUCK WITH THE BED EXTENDED IN THE UP POSITION.

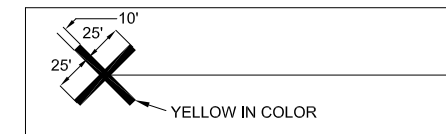
**AIRPORT SECURITY**

AIRPORT SECURITY WILL BE MAINTAINED AT ALL TIMES. THE PROPOSED HAUL ROUTE SHOWN ON THIS SAFETY PLAN IS THE ONLY ACCESS CONTRACTOR EQUIPMENT AND PERSONNEL WILL BE ALLOWED TO USE. THE CONTRACTOR SHALL PROVIDE BARRICADES AT THIS ACCESS AND ENSURE THE BARRICADES ARE IN PLACE AT THE END OF EACH WORKING DAY.

**CLOSURE OF RUNWAY 6/24 OR RUNWAY 14/32:**

WHEN CONSTRUCTION OPERATIONS MAKE IT NECESSARY FOR THE CONTRACTOR TO BE WORKING CLOSER THAN 125 FEET OF THE CENTERLINE OF RUNWAY 6/24 OR THE CENTERLINE OF RUNWAY 14/32, THE RUNWAY SHALL BE CLOSED PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES WITHIN 200 FEET OF THE CENTERLINE OF THE RESPECTIVE RUNWAY. THE CONSTRUCTION ACTIVITIES SHALL BE STAGED TO MINIMIZE THE CLOSURE TIME OF RUNWAY 6/24.

RUNWAY SHALL REMAIN CLOSED IF THERE ARE ANY OPEN TRENCHES OR PITS EXCEEDING 3" DEPTH WITHIN 125' OF THE CENTERLINE OF EITHER RUNWAY CAUSED BY EXCAVATING OR CONSTRUCTION ACTIVITIES. THE RUNWAY SHALL NOT BE REOPENED UNTIL THE TRENCHES OR PITS HAVE BEEN RESTORED TO ORIGINAL GRADES.



**DETAIL OF CROSS FOR CLOSED RUNWAY**  
 "NOT TO SCALE"

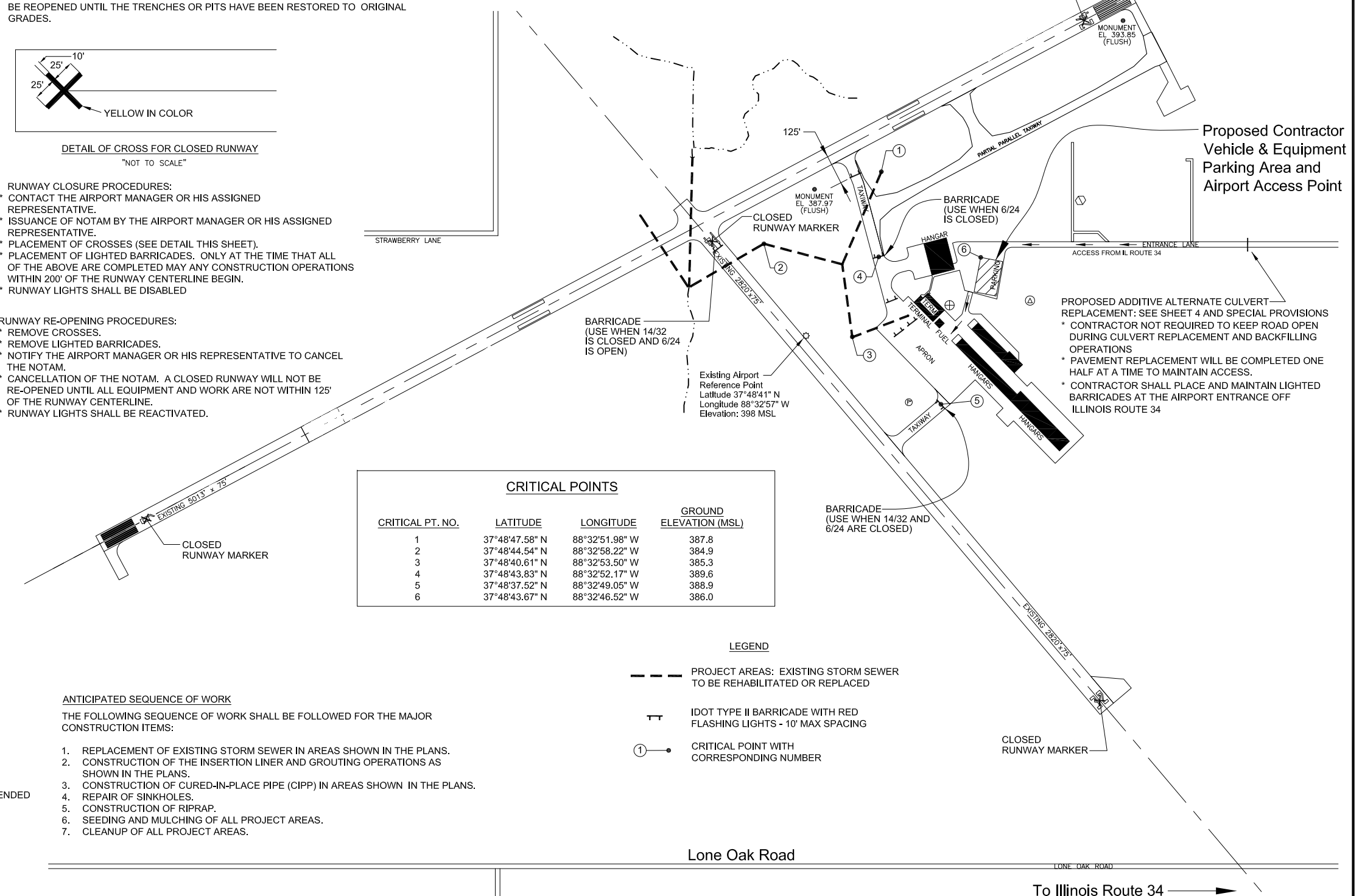
**RUNWAY CLOSURE PROCEDURES:**

- \* CONTACT THE AIRPORT MANAGER OR HIS ASSIGNED REPRESENTATIVE.
- \* ISSUANCE OF NOTAM BY THE AIRPORT MANAGER OR HIS ASSIGNED REPRESENTATIVE.
- \* PLACEMENT OF CROSSES (SEE DETAIL THIS SHEET).
- \* PLACEMENT OF LIGHTED BARRICADES. ONLY AT THE TIME THAT ALL OF THE ABOVE ARE COMPLETED MAY ANY CONSTRUCTION OPERATIONS WITHIN 200' OF THE RUNWAY CENTERLINE BEGIN.
- \* RUNWAY LIGHTS SHALL BE DISABLED

**RUNWAY RE-OPENING PROCEDURES:**

- \* REMOVE CROSSES.
- \* REMOVE LIGHTED BARRICADES.
- \* NOTIFY THE AIRPORT MANAGER OR HIS REPRESENTATIVE TO CANCEL THE NOTAM.
- \* CANCELLATION OF THE NOTAM. A CLOSED RUNWAY WILL NOT BE RE-OPENED UNTIL ALL EQUIPMENT AND WORK ARE NOT WITHIN 125' OF THE RUNWAY CENTERLINE.
- \* RUNWAY LIGHTS SHALL BE REACTIVATED.

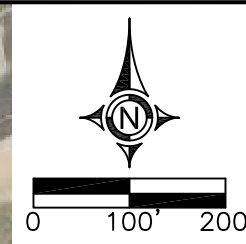
- \* WHEN RUNWAY 6/24 IS CLOSED, RUNWAY 14/32 SHALL ALSO BE CLOSED.
- \* NO CONTRACTOR EQUIPMENT OR PERSONNEL WILL BE ALLOWED WITHIN 66' OF AN ACTIVE TAXIWAY OR TAXILANE CENTERLINE WITHOUT CLOSING THE TAXIWAY OR TAXILANE WITH THE USE OF BARRICADES.
- \* NO EXIT TAXIWAYS OFF OF RUNWAY 6/24 SHALL BE CLOSED FOR A DURATION EXCEEDING 72 HOURS WHILE RUNWAY 6/24 IS OPEN.
- \* THE CONSTRUCTION ENTRANCE AS SHOWN ON THIS SHEET IS ONLY TO BE USED FOR THIS PROJECT, ACCESS TO THE PROJECT FOR ALL HAULING OF MATERIALS AND EQUIPMENT SHALL BE RESTRICTED TO THE DESIGNATED CONSTRUCTION ENTRANCE AND HAUL ROUTE. ACCESS TO THE WORK AREAS FROM THE STAGING AREA SHALL BE COORDINATED WITH THE RESIDENT ENGINEER AND AIRPORT MANAGEMENT.
- \* THE CONTRACTOR SHALL PROVIDE AN ESCORT (WITH A RADIO) WHEN REQUESTED BY THE RESIDENT ENGINEER.
- \* NO EQUIPMENT SHALL BE PERMITTED TO CROSS OR USE ANY EXISTING PAVEMENT OUTSIDE THE CONSTRUCTION LIMITS, GENERAL PROJECT AREA OR ACCESS ROUTE.
- \* THE CONTRACTOR SHALL PLACE BARRICADES WITH RED FLASHING LIGHTS AT TEN (10) FOOT SPACING TO PREVENT AIRCRAFT FROM ENTERING ANY AREA CLOSED FOR CONSTRUCTION.



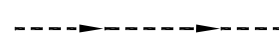
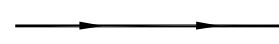
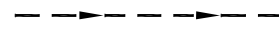
CRITICAL PT. NO.	LATITUDE	LONGITUDE	GROUND ELEVATION (MSL)
1	37°48'47.58" N	88°32'51.98" W	387.8
2	37°48'44.54" N	88°32'58.22" W	384.9
3	37°48'40.61" N	88°32'53.50" W	385.3
4	37°48'43.83" N	88°32'52.17" W	389.6
5	37°48'37.52" N	88°32'49.05" W	388.9
6	37°48'43.67" N	88°32'46.52" W	386.0

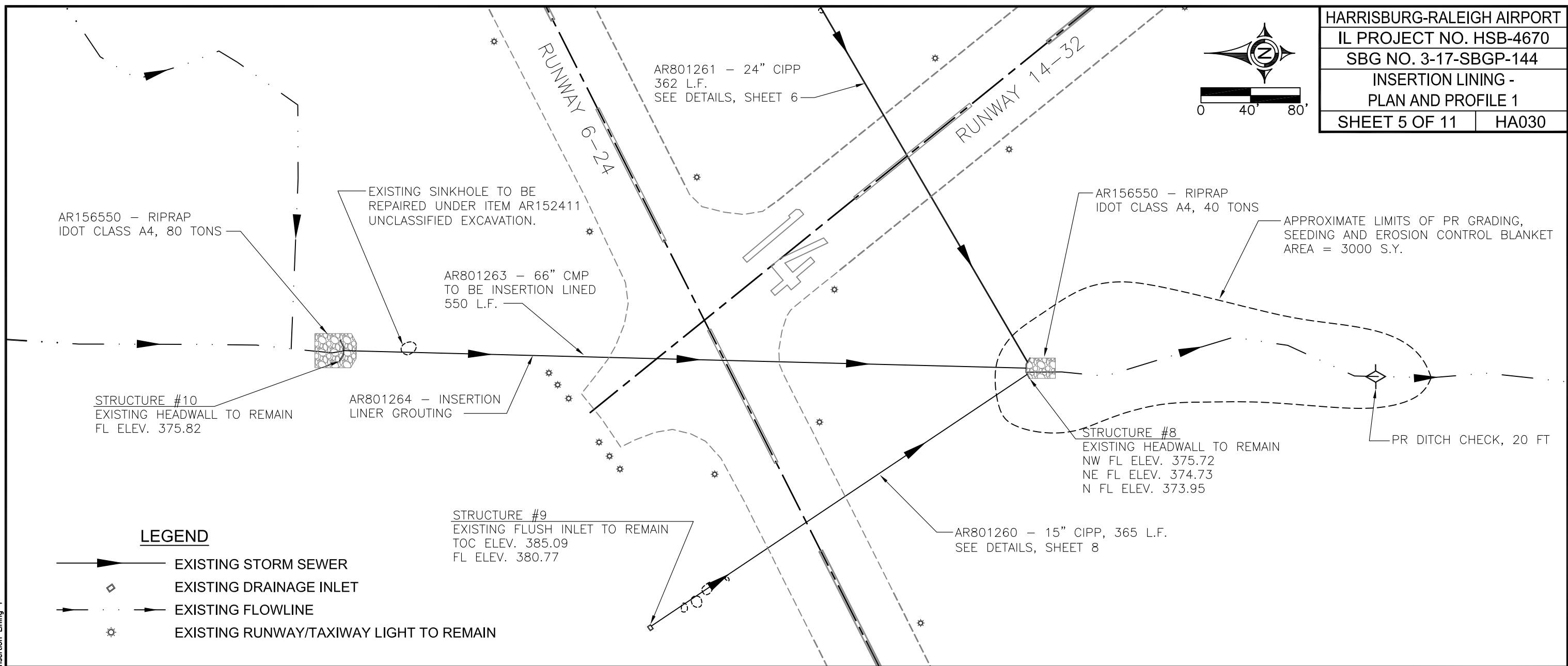
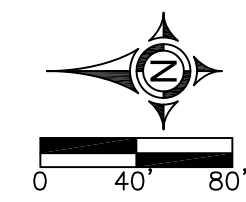
**LEGEND**

- PROJECT AREAS: EXISTING STORM SEWER TO BE REHABILITATED OR REPLACED
- IDOT TYPE II BARRICADE WITH RED FLASHING LIGHTS - 10' MAX SPACING
- ① CRITICAL POINT WITH CORRESPONDING NUMBER



**LEGEND**

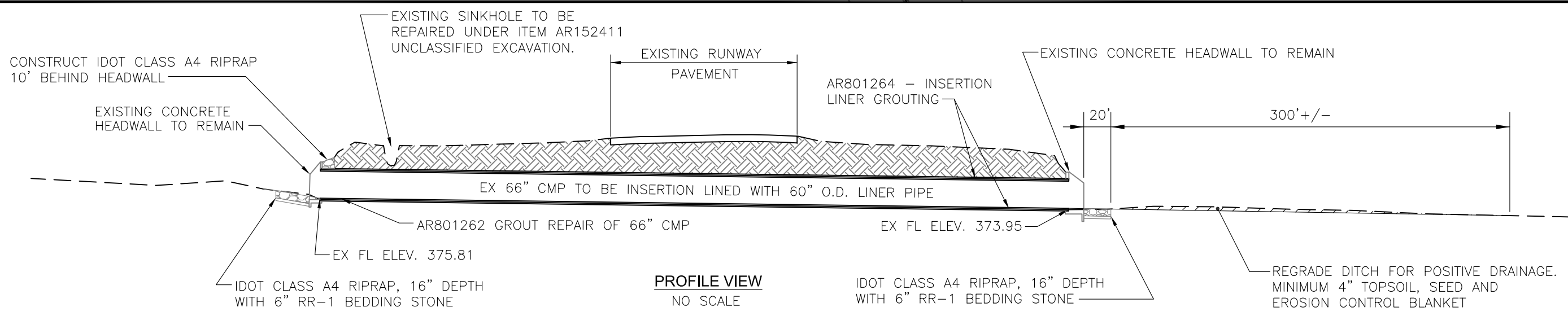
- 
 EXISTING CULVERT TO BE INSERTION LINED AND GROUTED
- 
 EXISTING STORM SEWER TO BE REPLACED
- 
 EXISTING STORM SEWER TO BE REHABILITATED WITH CURED-IN-PLACE-PIPE (CIPP)



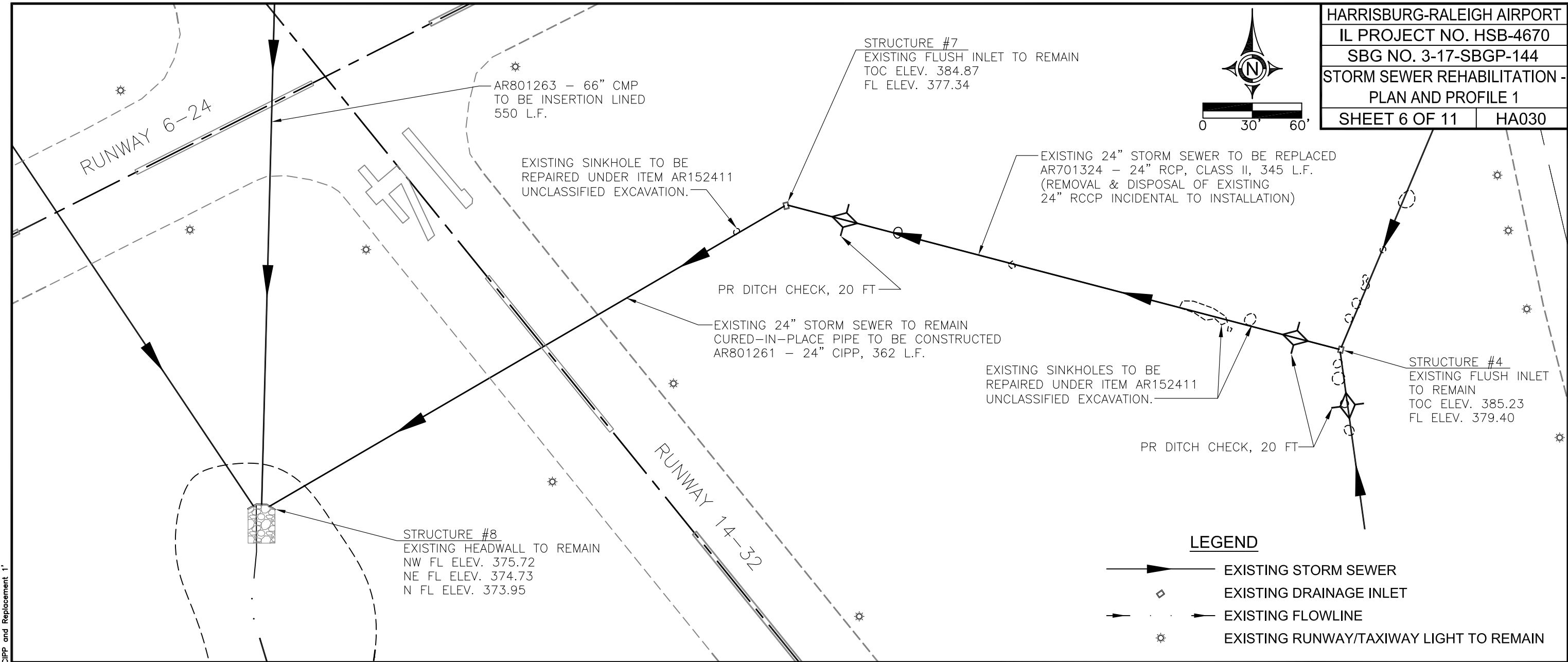
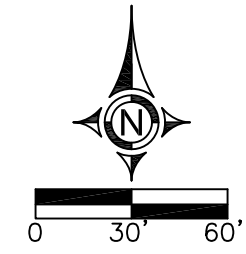
**LEGEND**

- EXISTING STORM SEWER
- EXISTING DRAINAGE INLET
- EXISTING FLOWLINE
- EXISTING RUNWAY/TAXIWAY LIGHT TO REMAIN

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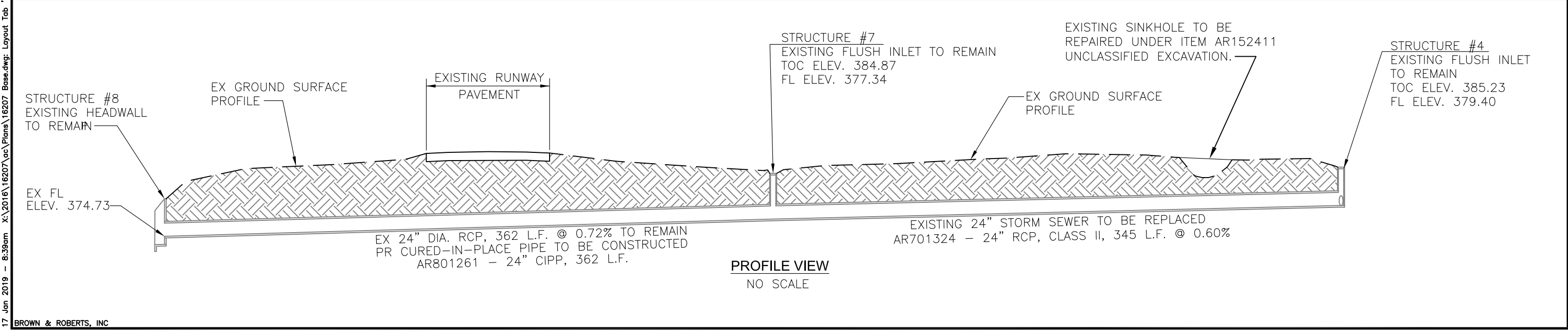


**PROFILE VIEW**  
NO SCALE



**LEGEND**

- EXISTING STORM SEWER
- EXISTING DRAINAGE INLET
- EXISTING FLOWLINE
- EXISTING RUNWAY/TAXIWAY LIGHT TO REMAIN



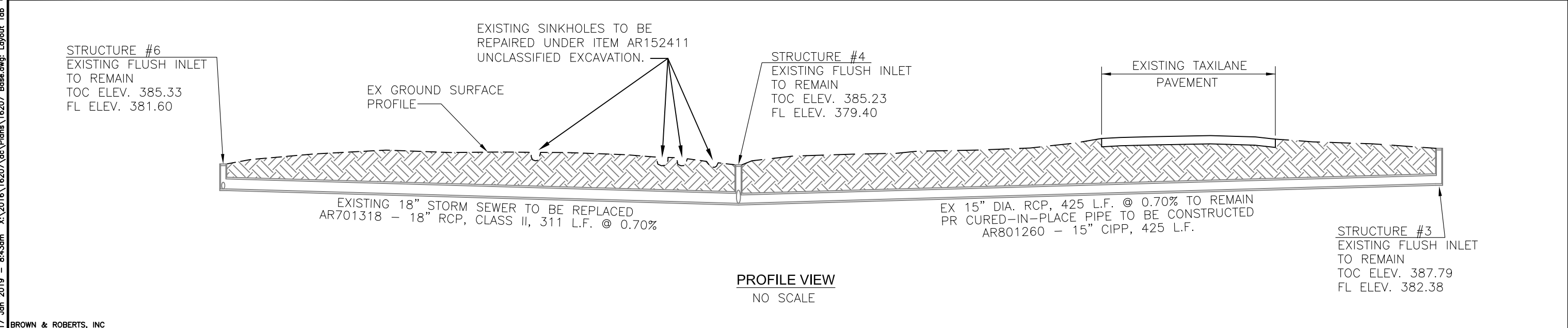
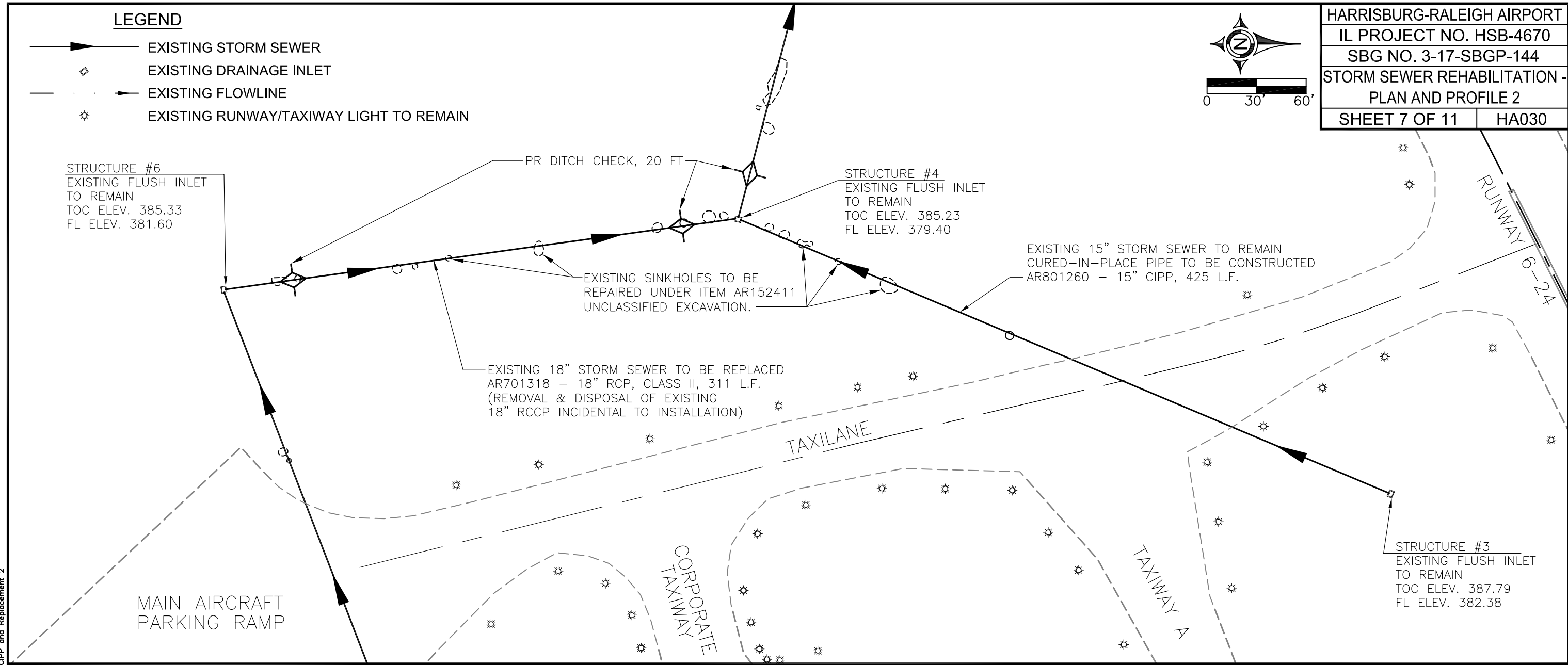
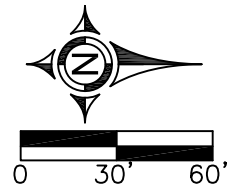
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**LEGEND**

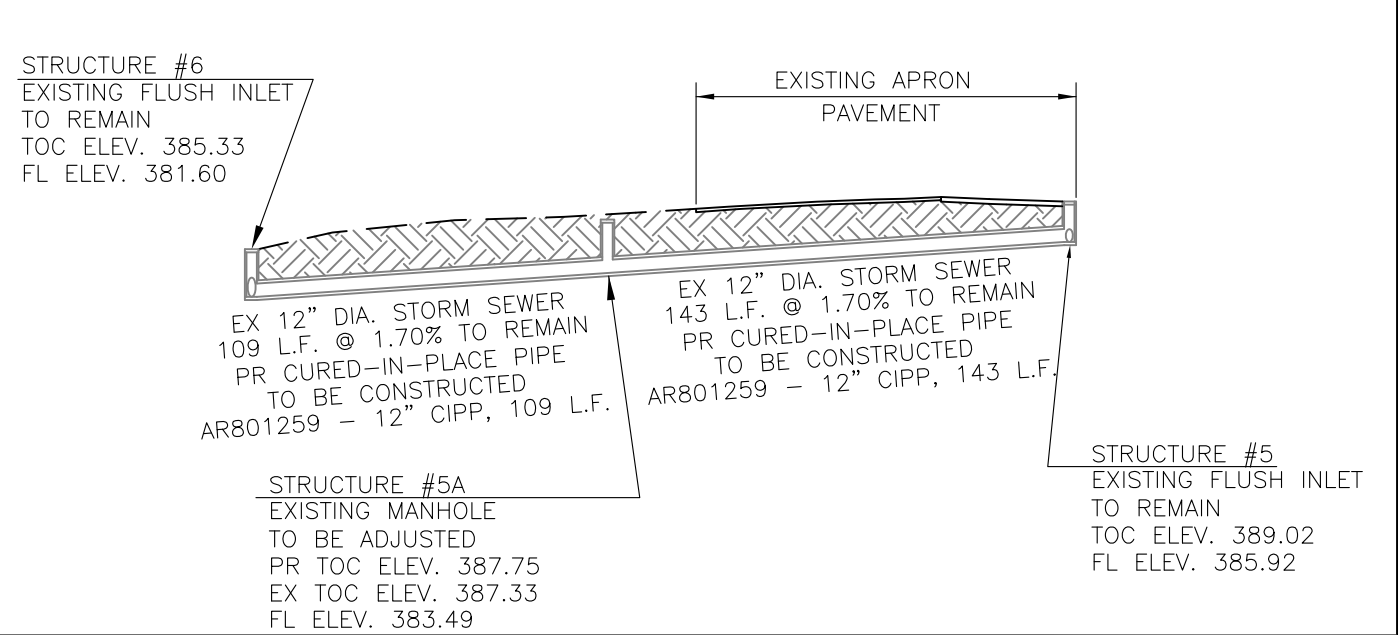
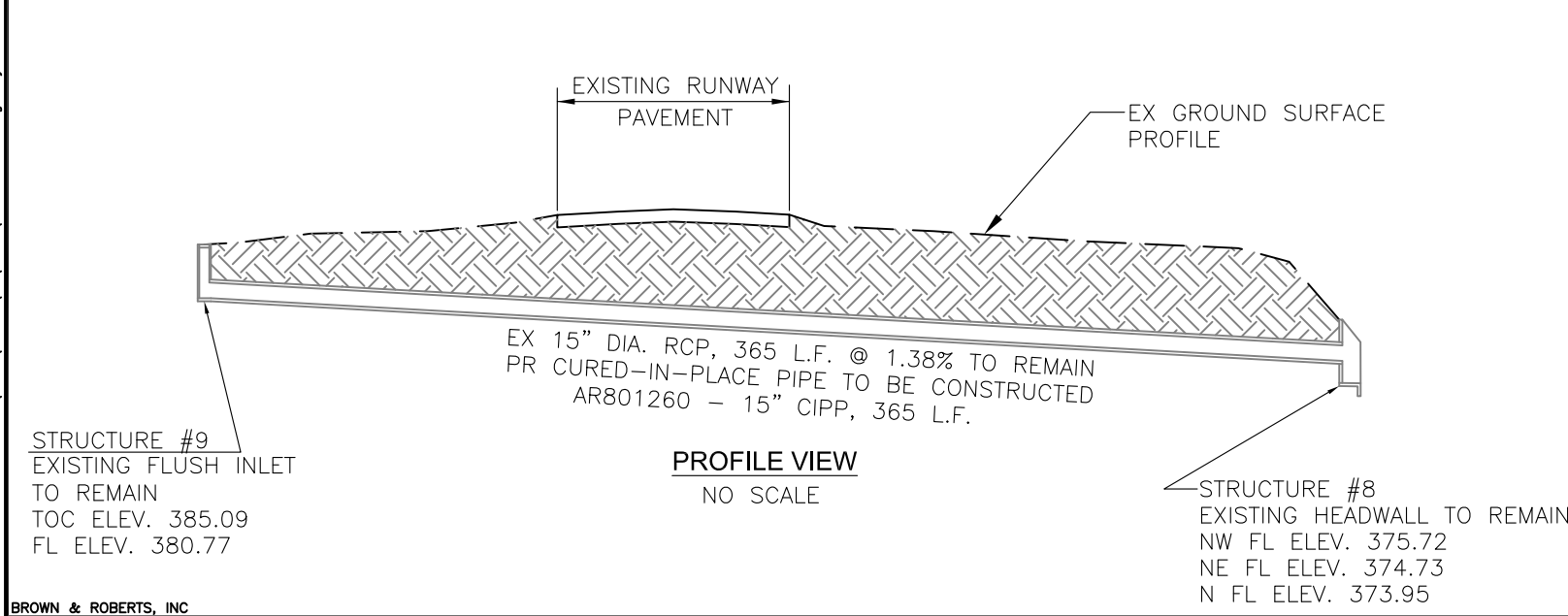
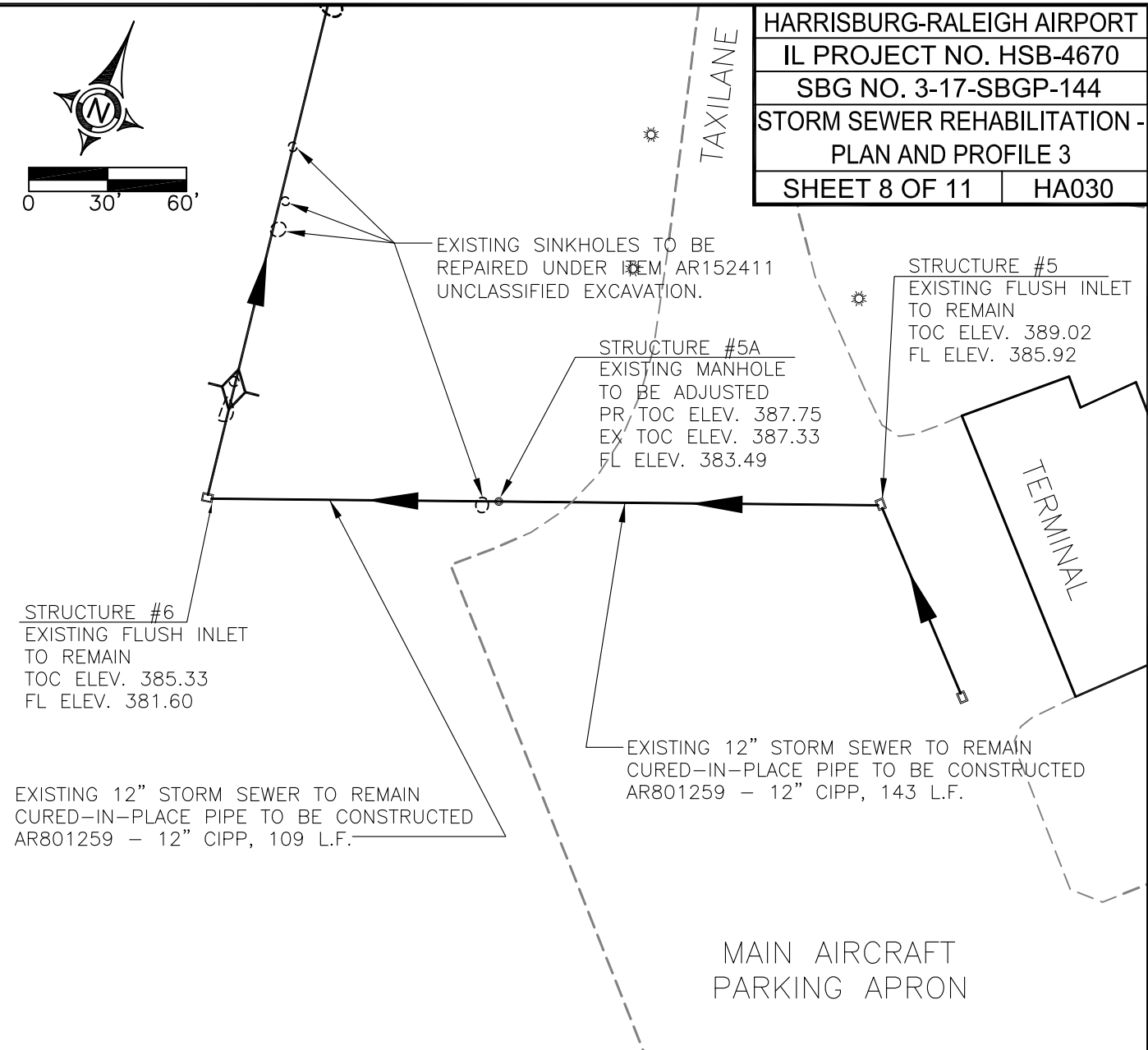
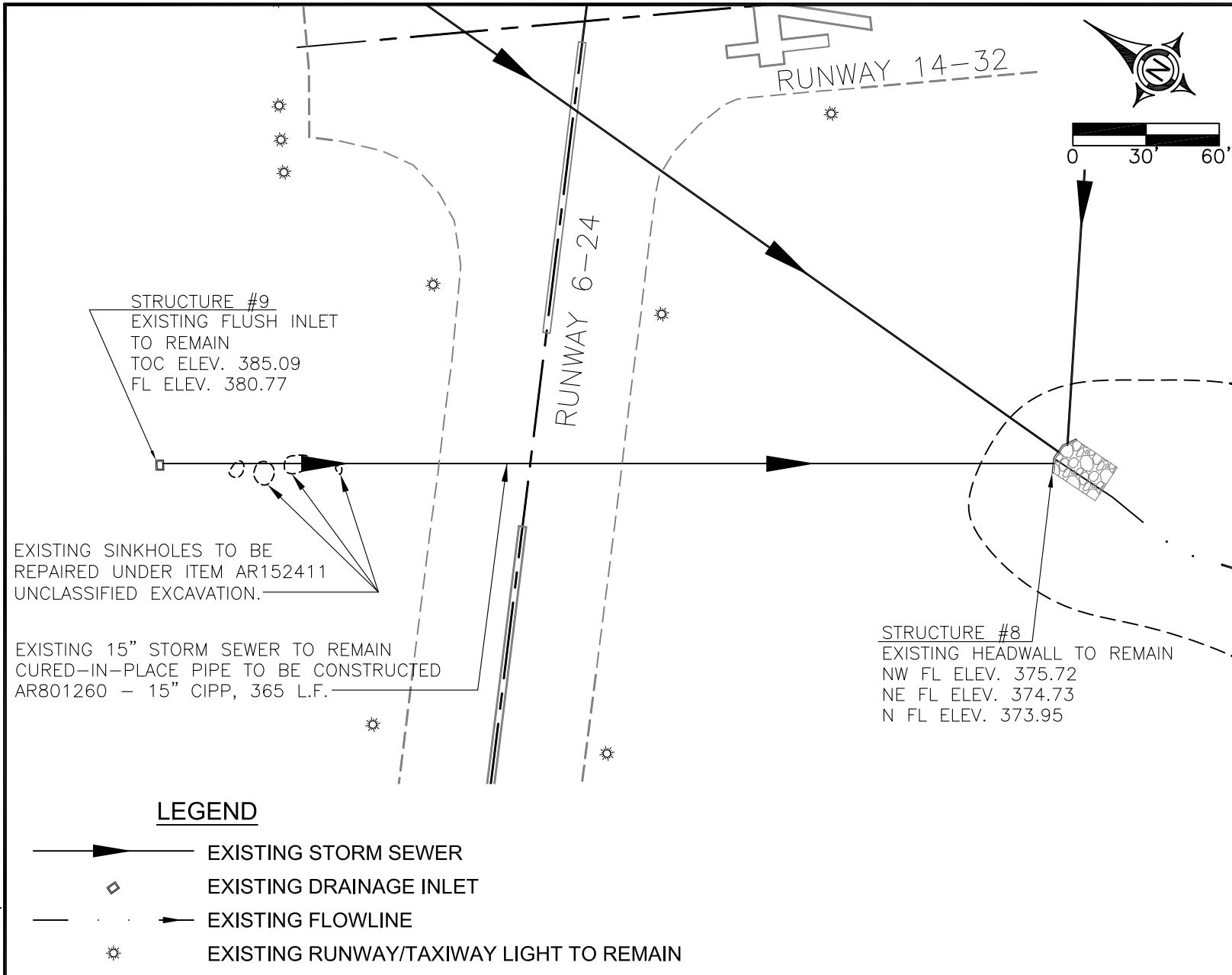
- ▶— EXISTING STORM SEWER
- ◊ EXISTING DRAINAGE INLET
- ▶— EXISTING FLOWLINE
- ☼ EXISTING RUNWAY/TAXIWAY LIGHT TO REMAIN

HARRISBURG-RALEIGH AIRPORT  
 IL PROJECT NO. HSB-4670  
 SBG NO. 3-17-SBGP-144  
 STORM SEWER REHABILITATION -  
 PLAN AND PROFILE 2  
 SHEET 7 OF 11 | HA030



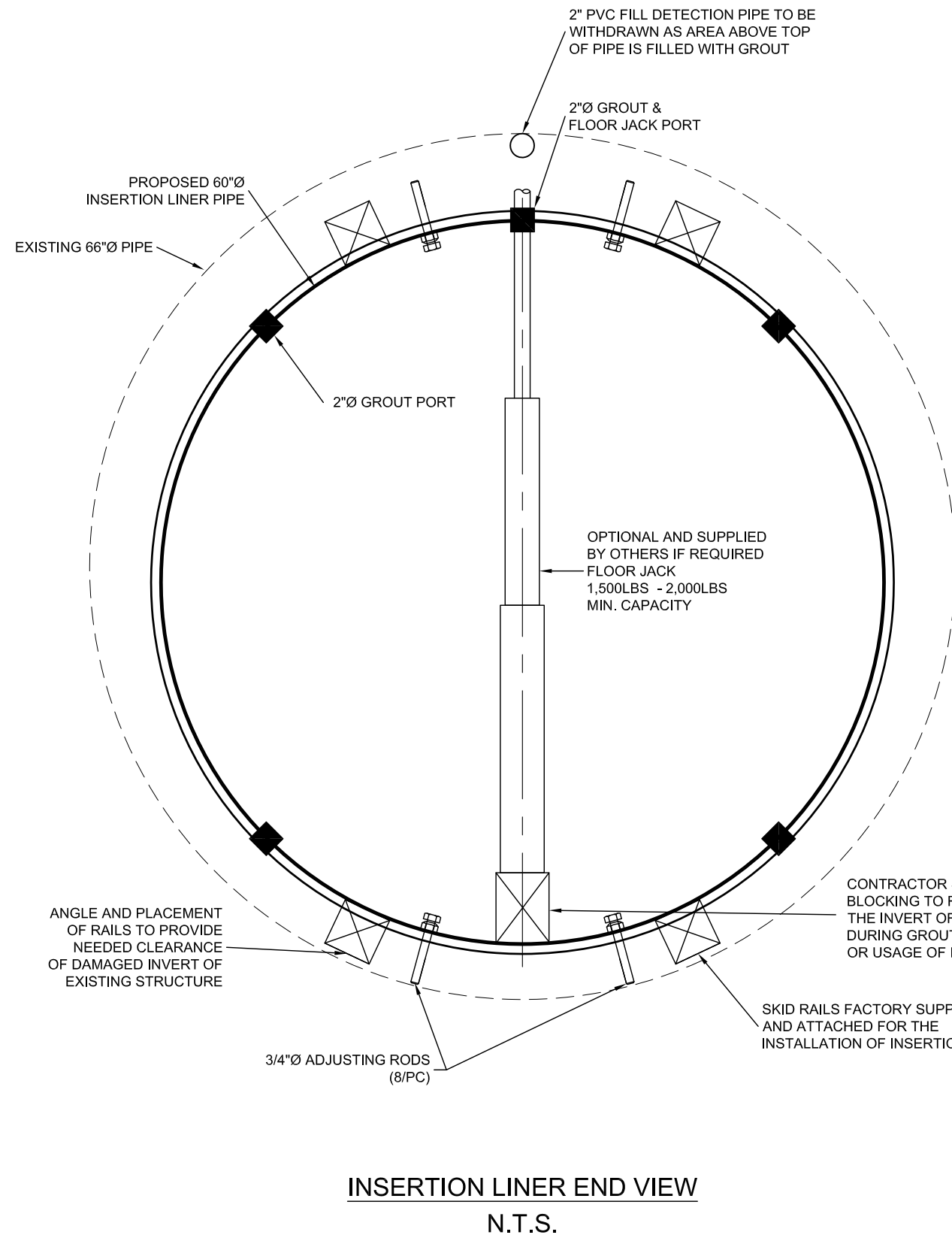
**PROFILE VIEW**  
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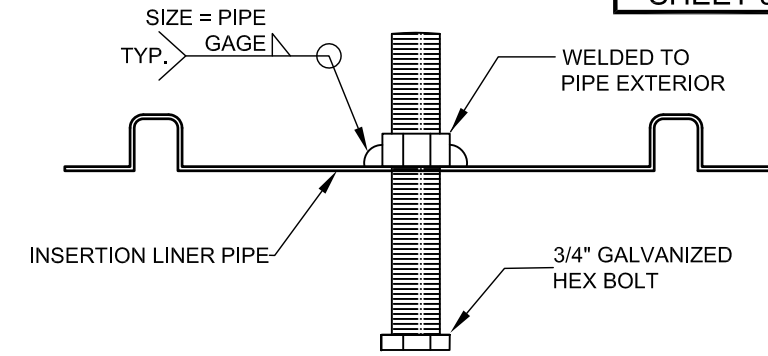


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 BROWN & ROBERTS, INC

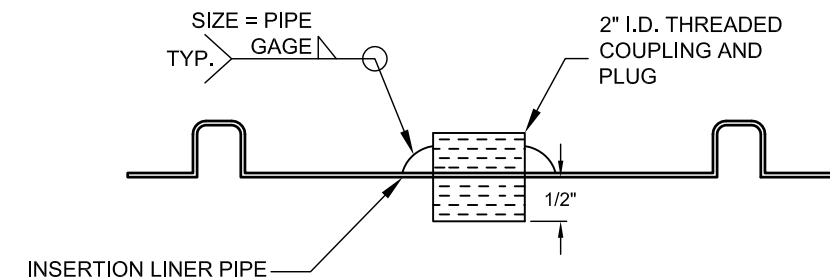




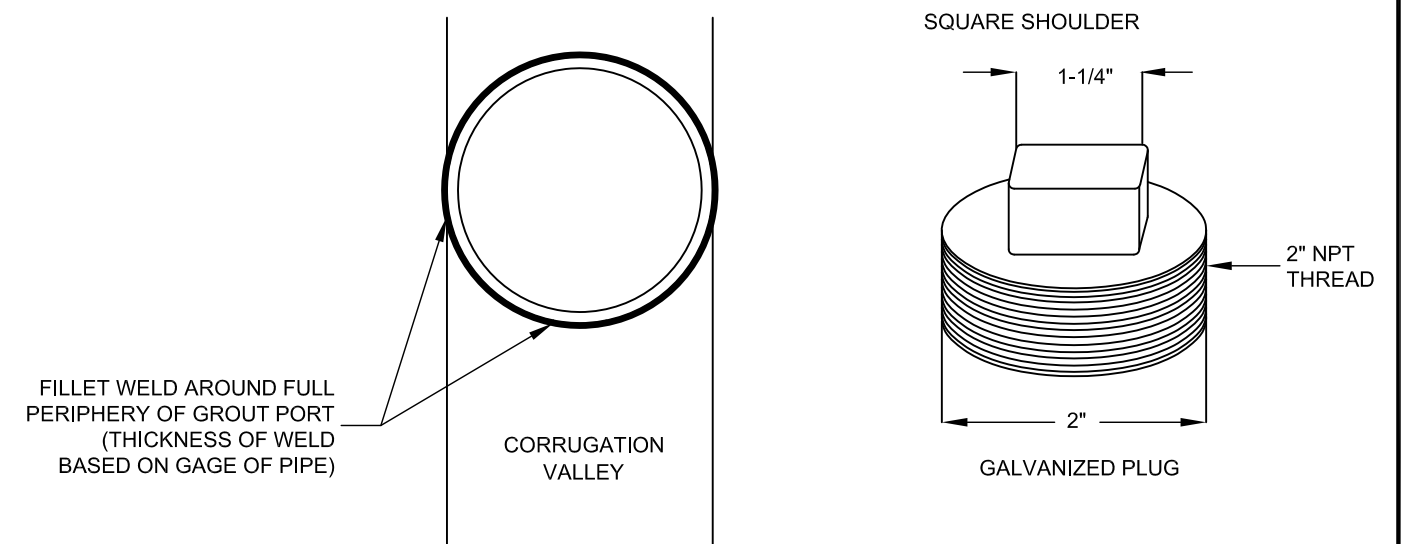
**INSERTION LINER END VIEW**  
N.T.S.



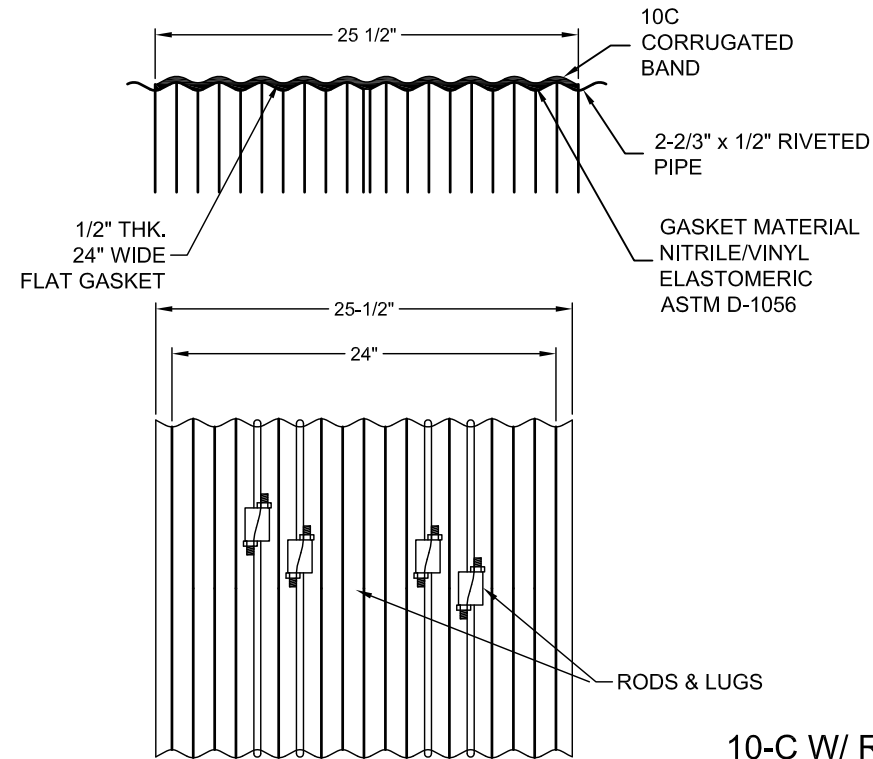
**ALIGNMENT ROD DETAIL (18" LONG)**  
(TEMPORARY - DURING CONSTRUCTION ONLY)  
N.T.S.



**GROUT COUPLING AND PLUG DETAIL**  
N.T.S.



**GROUT PORT ATTACHMENT DETAIL**  
N.T.S.

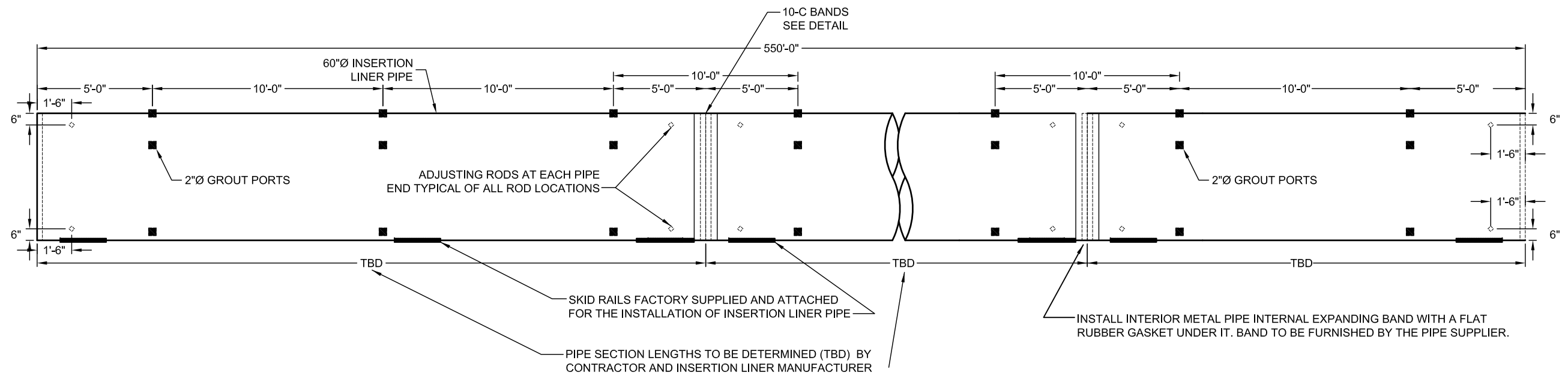


CORRUGATIONS	PIPE PRODUCTS
2-2/3"X1/2"	GALVANIZED ALUMINIZED BITUMINOUS COATED FIBER-BONDED ALUMINUM

GENERAL NOTES:

- REFER TO MANUFACTURER'S RECOMMENDATIONS FOR BAND WIDTH, GAGE, AND FASTENER TYPES.
- BANDS ARE NORMALLY FURNISHED AS FOLLOWS:  
 12" THRU 48" 1-PIECE  
 54" THRU 96" 2-PIECE  
 102" THRU 144" 3-PIECES.
- BAND FASTENERS ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDS..
- REROLLED ANNULAR END CORRUGATIONS ARE NORMALLY 2-2/3" X 1/2".
- DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.

10-C W/ ROD & LUG BAND CONNECTION DETAIL  
 N.T.S.



INSERTION LINER SECTION VIEW  
 N.T.S.

**SUGGESTED GROUT MIX DESIGN AND PLACEMENT REQUIREMENTS:**

DESCRIPTION:  
THIS WORK SHALL CONSIST OF THE IN-PLACE GROUTING OF CORRUGATED METAL PIPE INSERTS WITHIN EXISTING CULVERT PIPES AS SHOWN ON THE PLANS.

THE REQUIREMENTS OF THE WORK ARE SUCH THAT THE ENTIRE PORTION OF THE CELLS WHICH SURROUND THE CULVERT PIPE INSERTS SHALL BE COMPLETELY FILLED WITH GROUT FOR THE FULL LENGTHS OF THE CULVERT PIPE INSERTS.

MATERIALS:  
MATERIALS USED FOR GROUT MANUFACTURE SHALL CONFORM TO THE REQUIREMENTS OF THE FOLLOWING SPECIFICATIONS:

- MATERIAL
- PORTLAND CEMENT, TYPE 2
- FLYASH
- GROUT SAND
- WATER

GROUT MIX DESIGN:  
THIS SHALL BE PROPORTIONED BY WEIGHT IN ACCORDANCE WITH THE FOLLOWING ONE (1) CUBIC YARD MIX:  
THE GROUT SHALL BE A NON-SHRINK GROUT  
CEMENT           479 LBS.  
FLYASH           774 LBS.  
GROUT SAND   1,949 LBS.  
A SHRINKAGE REDUCING AGENT AS RECOMMENDED BY THE AGENT MANUFACTURER SHALL BE ADDED TO THE MIX.

SLUMPS SHALL BE BETWEEN 6.5" AND 8.0".

THE CONTRACTOR MAY PROPOSE AN ALTERNATE TO THE MIX DESIGN SPECIFIED ABOVE FOR APPROVAL.

GROUTING EQUIPMENT SHALL BE CAPABLE OF PLACING GROUT AT ALL LOCATIONS REQUIRED BY THE PLANS. ALL EQUIPMENT SHALL BE APPROVED BY THE RESIDENT ENGINEER AT LEAST FIVE (5) WORKING DAYS PRIOR TO ITS INTENDED USE. A WORKING DEMONSTRATION OF THE PUMPING EQUIPMENT'S CAPABILITY WILL BE REQUIRED AS PART OF THE APPROVAL PROCEDURE.

ALL GROUTING SHALL BE BATCHED FROM AN APPROVED AUTOMATED BATCH PLANT.

MINIMUM REQUIRED COMPRESSIVE STRENGTH TO BE 2000 PSI AT 28 DAYS.

MAXIMUM GROUT PRESSURE SHALL BE 5 PSI.

ALL PORTLAND CEMENT, FLYASH AND GROUT SAND SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION IN ILLINOIS FOR NON SHRINK GROUT.

CONSTRUCTION DETAILS:  
THE CONTRACTOR MAY PLACE THE GROUT IN ACCORDANCE WITH THE SCHEME SHOWN ON THE PLANS.

GROUT SHALL BE TRANSFERRED FROM THE POINT OF MIXING TO THE POINTS OF DEPOSITION ONLY BY APPROVED EQUIPMENT. THE GROUT SHALL BE PUMPED IN SUCH A MANNER THAT:

1. THE GROUT DOES NOT DILUTE OR SEPARATE
2. THE PIPE INSERTION LINER DOES NOT MOVE
3. ALL VOIDS BETWEEN THE LINER PIPE AND EXISTING CULVERT ARE COMPLETELY FILLED
4. THE GROUT DIFFERENTIAL LEVEL BETWEEN SIDES OF THE PIPE DOES NOT EXCEED 8"
5. THE GROUT PRESSURE CAN BE VARIED TO EFFECTIVELY MOVE THE GROUT AGAINST A HEAD PRESSURE OF NO MORE THAN 5 LBS. PER SQUARE INCH.

IF IT BECOMES NECESSARY TO CHANGE THE RATE OF PUMPING, THE PRESSURE WILL BE INCREASED AT A RATE NOT TO EXCEED ONE PSI PER MINUTE UP TO THE EQUIPMENT RATE.

AGITATION SHALL BE CONTINUOUS AND SHALL BE CONTINUED DURING SHUT-DOWNS. IF A SHUT-DOWN EQUALS OR EXCEEDS FIFTEEN (15) MINUTES, THE GROUT SHALL BE RECIRCULATED THROUGH THE PUMP AND DELIVERY LINES. IF REQUIRED BY THE ENGINEER, THE DELIVERY LINES SHALL BE FLUSHED CLEAN OF GROUT WITH CLEAN WATER. IF, IN THE OPINION OF THE ENGINEER, THE GROUT HAS BEGUN TO SET IN THE AGITATOR, PUMP, OR LINES, IT SHALL NOT BE PLACED REGARDLESS OF THE REASON.

CONTRACTOR SHOULD "SOUND" STRUCTURE TO BE ABLE TO OBSERVE GROUT PLACEMENT AND MOVEMENT.

**NOTES:**

- 1) THE JOINTS TO BE USED ARE 2" LONG ROD AND LUG STYLE WATER TIGHT BANDS WITH GASKETS. THESE ARE USED TO PREVENT GROUT FROM LEAKING INTO THE PIPE DURING THE GROUTING PHASE.
- 2) FLOTATION CONTROL IS CRITICAL AND THE RESPONSIBILITY OF THE CONTRACTOR.
- 3) PIPE MUST BE CONTINUOUSLY MONITORED DURING GROUT OPERATION TO OBSERVE/CONTROL ANY PIPE OR PIPE WALL MOVEMENT. THE CONTRACTOR SHALL REPAIR ANY PIPE DEFORMATIONS CAUSED BY THE GROUTING.
- 4) BLOCKING LAYOUT AND DESIGN BY CONTRACTOR.
- 5) THE LINING PIPE SHALL BE MADE FROM 60"Ø, 12GA PIPE.
- 6) COUPLINGS WILL BE 10-C W/ ROD AND LUG BANDS .
- 7) TO ACHIEVE A GROUT UNIT WEIGHT OF LESS THAN 110 PCF, A FOAMING AGENT OR OTHER MODIFICATION OF THE MIX DESIGN FROM THE REDIMIX PLANT WILL BE REQUIRED. THE MIX PROVIDED IS FOR REFERENCE PURPOSES ONLY.
- 8) ON EACH END OF THE EXISTING CULVERT THE CONTRACTOR SHALL SAW CUT THE EXISTING PIPE AND BUILD A BULKHEAD FOR THE CONTAINMENT OF THE GROUT.

**INSERTION LINER PIPE NOTES:**

SCOPE

THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE ALUMINIZED PIPE DETAILED IN THE PROJECT PLANS.

MATERIAL

THE ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M 274 OR ASTM A 929.

PIPE

THE INSERTION LINER PIPE SHALL BE MANUFACTURED WITH THE 3/4" X 3/4" X 7-1/2" EXTERNAL RIBS IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF AASHTO M-36 OR ASTM A 760. THE PIPE SIZES, GAUGES AND CORRUGATIONS SHALL BE AS SHOWN ON THE PROJECT PLANS.

ALL FABRICATION OF THE PRODUCT SHALL OCCUR WITHIN THE UNITED STATES.

HANDLING & ASSEMBLY

SHALL BE IN ACCORDANCE WITH NCSA'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) RECOMMENDATIONS.

INSTALLATION

SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II OR ASTM A 798 AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS, THE CONTRACTOR MUST BRING THEM TO THE ATTENTION OF THE PROJECT ENGINEER.

CONSTRUCTION LOADS

CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSA'S GUIDELINES.