

# **Hartsfield-Jackson Atlanta International Airport**

**City of Atlanta**

**Department of Aviation**

**Office of Infrastructure Planning & Development**

## **Airport Facilities Landside/ Airside New Construction and Modifications**

*Design Standards*

**Civil Engineering -  
Parking Facilities**

## Design Standards Civil Engineering – Parking Facilities

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## **Design Standards**

### **Civil Engineering – Parking Facilities**

#### **1.0 Purpose**

- A. The purpose of this Design Guideline is to set forth standards and criteria to be used for the design and preparation of construction documents for new facilities and renovations of the existing parking facilities at Hartsfield-Jackson Atlanta International Airport (ATL or “Airport”). These standards are not intended to restrict the creativity of the design professional by imposing strict standardization of design.
- B. When designing parking facilities, the overall goal is to provide facilities that are safe, attractive to the user, easy to maneuver in, and maximizes the number of parking spaces. The standards established herein provide a minimum level of standards in accordance with Professional Engineering practices. The design criteria and standards presented herein are expected to cover the majority of project work encountered at ATL. However, it is recognized that projects will occasionally require a divergence from these standards because of site-specific conditions. In such cases, the designer is expected to work from a base of sound engineering judgment and experience, and deviations from the standards will be reviewed and approved in accordance with Administrative Procedures of the Design Standards.

#### **2.0 Design Intent**

- A. All design work shall be done in accordance with accepted professional practices and in compliance with all applicable codes, standards and regulations.
- B. In some cases, certain generally acceptable design alternatives are restricted or prohibited because of the special needs of the Airport environment. These situations will be spelled out in the Technical Standards section that follows.

#### **3.0 Airport Parking Services**

- A. Hourly
  - 1. Hourly Parking is designed for high turnaround. They are located directly in front of each terminal for walkable access.
- B. Daily
  - 1. Daily Parking is designed for covered overnight parking. They are located directly across from each domestic terminal for walkable access.
- C. Economy
  - 1. Economy Parking is designed for long-term parkers. They are located adjacent to the domestic parking decks within walking distance of the domestic terminal.
- D. Park-Ride
  - 1. Park-Ride Parking is designed for long-term parkers. They are located in more remote locations. Access to the Park-Ride Parking lots are provided by an Airport Park-Ride Shuttle. Airport Park-Ride Shuttle operation offers shuttle service from the customer’ vehicle or pick up area to the associated terminal of their choice. Upon returning to Atlanta, passengers are picked up at the respective Ground Transportation area and returned to their vehicle.
- E. Gold Reserve
  - 1. Gold Reserve Lots are located a very short walking distance from the North, South, and International terminals on the ground level of the parking decks and are covered. The private entrance and exits are equipped with an intercom for customer assistance and parking spaces are reserved.

F. Park-Ride Reserve

1. The Park-Ride Reserve Lot is designed to accommodate Airport customers who prefer a reserved parking space however do not require walkable access to the terminals. Access to the Park-Ride Reserve lot is provided by an Airport Park-Ride Shuttle that picks passengers up at their vehicles and transfers them to the terminal of their choice.. Upon returning to Atlanta, passengers are picked up at the respective Ground Transportation area and returned to their vehicle. The lot also serves as an overflow parking lot when all other lots are full.

G. Cell Phone

1. The Remote Parking Lot is designed to accommodate Airport customers picking up passengers at Hartsfield–Jackson Atlanta Airport free of charge until passengers arrive at the terminal curbs.

**4.0 Site Considerations**

A. Security

1. Recent security considerations have periodically placed restrictions on allowable distances between parked cars and airport terminals. Site placement and/or design elements can have a tremendous mitigating effect on allowable distances between parking and other airport structures. It is essential to assess site selections and/or design elements with the United States Transportation Security Administration (TSA) authorities for obtaining optimal solutions.
2. Fencing around surface parking lots is generally not part of the airport perimeter security fence (separating Aircraft Operations Area (AOA) from landside). In these locations the fence serves as security to prevent unauthorized entry to public vehicle parking areas.
3. The airport has employed a system of CCTV (Closed Circuit Television) security cameras and Emergency Call Boxes throughout its parking structures and surface parking lots. All new parking facilities will be required to include a similar surveillance system and Emergency Call system. The camera signals and call boxes are monitored/responded to in the PSAP (Public Safety Answering Point) in the lower level of the North Terminal and or C4.

B. Traffic Patterns

1. ATL is located among several major Atlanta traffic arteries. Consideration needs to be provided for motorists who are unfamiliar with the area and are likely to enter the wrong drives. “Escape Exits” are desirable wherever possible to allow motorists to exit from parking entrance lanes rather than be forced to enter the parking system. Multiple entry and exit points for the public and shuttle busses, where applicable, shall be provided for redundancy and to accommodate continued service during repairs.
2. Internal traffic patterns must be considered to prevent unnecessary conflicts to traffic flow. Entrances and exits require design considerations to minimize the requirement for rapid lane changes when trying to access different routes. Adequate space must also be allocated to prevent long lines of vehicles that are entering parking facilities from interfering with other traffic flow.
3. Pedestrian traffic flow must be considered in similar fashions to prevent conflicts with vehicular traffic and to avoid hazardous conditions. Clearly understood way-finding signs are essential.
4. Access to firefighting apparatus and pay on foot equipment must also be considered.

## 5.0 Surface Parking

### A. Entry /Exit Lanes

1. Entry lanes shall be 9'-6" clear between curbed islands with all parking revenue control equipment mounted on 6" high curbed islands. The exception would be a parking facility serving oversized vehicles in which case one lane should be 10' clear between curbed islands. Ticket dispensing machines are to issue tickets automatically via the car passing over an embedded wire loop. All entry lanes ticket dispensing machines and gates shall be protected with appropriate barriers (bollards or other means) to prevent being struck by a vehicle. Exit lanes shall match the same requirements as entry lanes.

### B. Parking Layout

1. Parking stalls in surface revenue parking facilities shall typically be 18'-0" by 8'-6" in a 90-degree arrangement (70-degree allowed with approval). If necessary, parallel parking stalls shall be 20' by 9' if adjacent to an obstruction less than 8" high and 20' by 10' if adjacent to an obstruction greater than 8" high. The aisle width shall be 24'. If necessary, one-way aisle width shall be a minimum of 20'. Parking stalls in Facility Parking areas, such as Fire Stations or Parking Management buildings, shall be 18'-0" by 9'-0". All ADA (Americans with Disabilities Act) accessible stalls shall be as close to the terminal or facility entrance as possible, and they shall comply with the ADA standards and criteria. All variances must be approved by DOA Engineering.

### C. Height Clearance

1. For parking lots in which vehicles will encounter a height limitation with the parking lot, such as a canopy over the entry or exit plaza, the appropriate height clearance should be posted at the entrance, and restricting devices shall be located above the entrance lanes to limit over-height vehicles from entering.

### D. Pavement

1. Surface parking lot pavement structure shall be asphalt. Different pavement use areas shall be delineated in the plans. The designer shall consider any special uses for the parking facility which may necessitate a stronger pavement section than indicated below. An example of a special use is a parking lot that has a dumpster pad or trash compactor requiring access for a high axle load vehicle. Entry / Exit lanes, and aisles with more than normal traffic, and bus lanes shall be considered Circulation Roads, and the pavement section shall be thickened according to the following table:

<b>Pavement Use</b>	<b>Asphalt Surface</b>	<b>Asphalt Base</b>	<b>Base</b>
Parking Lot	2" E	2"	6" Crushed Aggregate
Circulation Road	2" E	4"	8" Crushed Aggregate

2. The pavement subgrade shall be constructed in accordance with Planning and Development (P&D) standards and specifications.

### E. Signing, Striping, and Pavement Markings

1. All regulatory signing, marking and striping used on ATL parking lots shall comply with Manual on Uniform Traffic Control Devices (MUTCD) and P&D Standards, Details, and Specifications. Substitutions, alterations or additions shall be submitted and will be considered in accordance with the Administrative Procedures of the ATL Design Standards.
2. All stalls shall be marked and striped with painted lines. Georgia Department of Transportation (GDOT) Direction arrows and pavement markings shall be used to supplement signs in conveying certain messages or directions.

## F. Grading/Drainage

1. Parking lots shall be graded so that storm water runoff is directed away from areas where pedestrians will walk. Low areas shall be kept away from the walkways leading to the airport terminal entrances. Minimum acceptable grades shall be as required to provide positive drainage and maximum shall be 5%. Pedestrians should be able to exit their cars, unload their luggage and walk to the entrance without walking into accumulated or standing runoff. Inlets shall not be installed in the aisles. Curb inlets located at the curbs of landscaped islands shall be preferable, but drain inlets are acceptable. Slotted drains may be used to prohibit the flow spread outside the desirable limits where grading does not allow the placement of inlets. Slotted drains should not be placed where pedestrians will walk. Note ADA accessible route requirements where appropriate.

## G. Pedestrian Access

1. It is anticipated that pedestrians will pass through the stalls to the aisles and from there to the nearest sidewalk or dedicated walkway to the entrance to the terminal(s). Sidewalks shall be required within all parking facilities within walking distance of a terminal where shuttle bus service is not provided. Walkways shall be a minimum of 8' in width and shall consist of painted edge stripes with appropriate zebra style cross striping when at grade. Pedestrian walkways shall be used to direct pedestrians to prime vertical circulation cores within the structures or to walkways across the terminal curbside roadways.
2. These designated walkways shall be placed wherever possible to separate the pedestrians from the vehicular traffic. Pedestrian paths at intersections with vehicular traffic shall be marked to give pedestrians the right-of-way at all times. Good visibility shall be provided for pedestrians and drivers at all intersections. All ADA accessible stalls shall be as close to the Terminal entrance as possible, and they shall comply with the Americans with Disabilities Act standards and criteria.

## 6.0 Parking Decks

### A. Deck Parking Layout

1. Layout of parking decks shall be determined by which layout provides the highest yield of parking spaces given site constraints. Current Airport parking deck layouts range from 70° angled parking stalls with one-way flow with a 54' minimum width parking bay (one row of angled parking stalls on each side of a one-way aisle 20' in width) to 90° parking stalls with two-way flow with a 60' minimum width parking bay (one row of parking stalls on each side of a two-way aisle 24' in width). Two-way vehicular cross circulation aisles at the end of each row of parking shall be a minimum of 24' in width.
2. All ADA accessible stalls and accessible routes shall be as close to the terminal entrance as possible, and they shall comply with the Americans with Disabilities Act standards and criteria. All variances and methodology for choosing parking layouts must be approved by DOA Engineering.

### B. Entry /Exit Lanes

1. Entry lanes shall be 9'-6" clear between curbs/islands with all revenue control equipment mounted on 6" high curbs/islands. Ticket dispensing machines are to issue tickets automatically via the car passing over an embedded wire loop. All entry lanes ticket dispensing machines and gates shall be protected with appropriate barriers to prevent being struck by a vehicle. Exit lanes shall match the same requirements as entry lanes.

### C. Height Clearances

1. Minimum clearance height within the garage should be designed with a minimum of 8' - 5" clearance to any structure or sign. It should however be signed with a minimum clearance of 8'-2" to allow for variances in construction. Restricting devices shall be

located above the entrance lanes to limit over-height vehicles from entering. Whenever possible, ADA van parking, which requires 8'-2" clearance, should be located on the ground floor with additional height restriction devices placed at the bottom of ramps to preclude vehicles over 7' in height from ascending to the upper levels (for reasons of weight limitations).

#### D. Ramping

1. Vehicular vertical circulation should be in the form of straight express ramps between floors with a minimum roadway width of 16 feet with a one-foot-wide raised curb on each side. In the event design factors require curved express ramps between floors, they should be designed to allow for a vehicle to pass a stopped vehicle with a two-foot-wide raised curb on the inside and a three-foot raised curb on the outside radius of the curve.
2. The maximum grade shall be limited to 10%. Adjacent grades with an algebraic difference of more than 7% shall require transition sections at the top and bottom of the slope. Transition sections shall be a minimum of 10' in length and have grades that are equal to one half the differential slope.

#### E. Pedestrian Access

1. Dedicated pedestrian walkways shall be required within all parking structures. These walkways shall be painted on the driving surface and shall be a minimum of 8' in width, consisting of painted edge stripes with an appropriate zebra style cross striping.

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Public Roadways**

## Design Standards Civil Engineering – Public Roadways

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## Design Standards

### Civil Engineering – Public Roadways

#### 1.0 General

- A. The purpose of the Design Standards is to provide direction to Design Professionals and provide the minimum acceptable standards to be used for the design of new facilities and renovations of the existing Roadways Facilities at Hartsfield-Jackson Atlanta International Airport (ATL). These Standards are not intended to restrict the creativity of the design professional by imposing strict standardization of design.
- B. These design criteria shall consider at a minimum the following: traffic, safety, economic, funding, physical, public, jurisdictions, and environmental concerns and impacts, while providing efficient movement of people, vehicles, goods, and services that connect ATL facilities to public roads and facilities.
- C. Roadway (Landside) facilities shall consist of public access routes outside the ATL airport operations area (AOA) and within the designated right of way areas established for constructing, maintaining, and accessing these roadways and associated facilities. The Roadway Facilities shall include the following:
  - 1. Connections to Interstates and other public roads
  - 2. Passenger terminal curbside operations, including loading zones, parking and drop-off lanes
  - 3. Taxi staging areas
  - 4. Shuttle bus operations
  - 5. Public transit related services
  - 6. Landside service roads for maintenance and emergency vehicles
  - 7. Cargo building, shipping and receiving areas
  - 8. Other public roads in non-AOA areas of the Airport intended for public access and circulation
- D. Roadway design will generally be governed by the standards in this document. Where roadway construction is proposed outside of the Airport's property/jurisdiction, such construction shall conform to the requirements of the Authority having jurisdiction. It will be the designer's responsibility to coordinate tasks with overlapping elements and design intent with those outlined in other sections of these Design Standards to ensure that minimum standards are verified and that these conditions are met.
- E. Replacement of existing facilities to be maintained by others shall be replaced in kind, unless otherwise directed by Planning and Development. New facilities to be maintained by others shall be designed in conformance with their current design standards of the agency having governing jurisdiction.
- F. The intent described herein provides a sound design base for developing standardized engineering documents to accomplish the specific projects goals as outlined by ATL. The design criteria and standards presented herein are expected to cover the majority of project work encountered at ATL. However, it is recognized that projects will occasionally require a divergence from these standards because of site-specific conditions. In such cases, the designer is expected to work from a base of sound engineering judgment and experience, and deviations from the standards will be reviewed and approved in accordance with Administrative Procedures of the Design Standards.

## 2.0 Basic Goals

- A. The basic goals of this chapter are:
  1. To outline design intent standards as they relate to various categories, which are applicable and common to all Landside roadways.
  2. To focus on established safety standards for ATL patrons throughout the design process.
  3. To establish convenient traffic circulation patterns for vehicular and pedestrian movement.
  4. To provide for the construction of new access and circulation roads owned by ATL.
  5. To provide for the reconstruction of local roads and streets disturbed by ATL construction.

## 3.0 Design Vehicles

- A. All roadways shall be designed to accommodate passenger cars, buses, trucks and all other vehicles, unless otherwise noted, as classified in the “A Policy of Geometric Design of Highways and Streets” latest edition manual of the American Association of State Highway and Transportation Officials (AASHTO). Coordinate with the appropriate Fire and Emergency responders to determine need for specialty vehicle access.

## 4.0 Design Speed

- A. The minimum desirable design speed for all roadways shall be 5 miles per hour greater than the posted speed.

## 5.0 Capacity

- A. Some level of capacity analysis will be performed during the planning stage. Designers may be required to perform additional analysis or to validate analysis already performed by others. If analysis or validation is required, it shall be based on the standards of the Highway Capacity Manual (HCM). The roadway capacity shall consider traffic volume, intersection Level of Service (LOS), warrants, pedestrians, types of vehicles and roadway operational LOS.

## 6.0 Access and Circulation Roads

- A. Access and Circulation Roads are provided to give access to the airport patrons to and from the local highways and streets. The number of lanes shall be established based on a traffic capacity analysis, acceptable level of service for immediate and future needs as determined by ATL, and the width of the roadway shall depend on the number of traffic lanes needed. The roadways shall be located to give patrons the opportunity to be dropped off and picked up as close to the terminal entrance as possible. Preferably roadways shall be one way if possible, especially adjacent to loading and unloading areas.

## 7.0 Loading Zones, Parking and Drop-Off Lanes

- A. Loading zones, parking and drop-off lanes shall be located as close to the terminal entrance as possible and they shall be designed to give priority to different transportation modes in the following order: Buses, passenger cars for persons with special needs, other passenger cars. Sidewalks adjacent to loading zones shall be 16 feet wide desirable, but under no circumstances less than 12 feet wide. Loading Zones shall be clearly defined and signed to minimize confusion of passengers and to promote accessibility. The posted speed through the loading zones shall be 5 miles per hour.

## 8.0 Traffic Islands and Medians

- A. All traffic in two-way roadways shall be channelized using raised medians, raised traffic islands and traffic barrier walls upon specific direction by Department of Aviation (DOA) for each particular project. Traffic medians shall be raised concrete or landscaped islands and the minimum width shall be 4 feet measured from face of curb to face of curb. Where left turning lanes are added the median width may be reduced to two feet measured from face of curb to face of curb. In loading zones where parking and drop off is to be accommodated, the median width shall be 16 feet wide desirable, but under no circumstances less than 12 feet wide.

## 9.0 Raised Crosswalks

- A. Raised crosswalks shall be used to connect parking garages and surface parking lots with the terminal at both levels and they shall be strategically located to provide easy, direct and safe access to and from the different facilities. Raised crosswalks crossing roadways and loading zones shall be ramped providing a maximum cross slope of 12 horizontal to 1 vertical for vehicular traffic. They will be striped and marked with adequate stopping sight distance.

## 10.0 Intersections

- A. Intersections shall be at angles as close to 90 degrees as possible. If the intersection angle is less than 65 degrees, realignment of the roadways shall be considered. It is recommended that horizontal curves should not be allowed within 200 feet of the intersection. Approaching grades shall be as flat as possible, but positive drainage must not be compromised. Intersections, including median openings, shall be designed with adequate stopping sight distance and the intersection area shall be free of obstacles. Sight distance requirements at intersections shall be established according to the standards described in the "A Policy of Geometric Design of Highways and Streets" latest edition manual of the American Association of State Highway and Transportation Officials (AASHTO). Curb cut ramps and pedestrian crosswalks should be provided at all intersections where pedestrian traffic is expected. Curb return radii shall be designed based on site specific requirements allowing for the turning path of the design vehicle.

## 11.0 Geometric

- A. Horizontal Alignment
  - 1. All geometric elements of all roadways shall be determined to provide safe and continuous operation at the design speed for that roadway. The major considerations shall be safety, design speed, topography, and associated construction cost. Curves should be superelevated according to standards described in the "A Policy of Geometric Design of Highways and Streets" latest edition manual of the American Association of State Highway and Transportation Officials (AASHTO). Roadways in tangent sections should be crowned in the center and be sloped towards the outside edges.

## B. Horizontal Curvature

1. The horizontal curvature of all roadways shall be determined according to the criteria listed in the “A Policy of Geometric Design of Highways and Streets” latest edition manual of the American Association of State Highway and Transportation Officials (AASHTO) and according to the design speed. Horizontal curvature shall be based upon speed and superelevation. The maximum desirable superelevation rate shall be
  - a. 0.04 ft/ft. Spiral curves shall not be used on landside roadways.

## C. Vertical Alignment

1. The vertical alignment of all roadways shall be designed to provide adequate sight distance, safety, comfortable driving, good drainage and pleasing appearance. Parabolic vertical curves shall be used to connect tangents of different grades. Vertical curves are also required when connecting a new road (or driveway) into an existing one. Grade breaks are not allowed, unless approved by DOA Engineering. The length of a vertical curve shall be determined using the equations and tables referred in the “A Policy of Geometric Design of Highways and Streets” latest edition manual of the American Association of State Highway and Transportation Officials (AASHTO). Minimum stopping sight distance shall be provided in all cases. Maximum and minimum grades used shall be as indicated below.

## D. Profile Grades

1. The maximum allowable longitudinal grade shall be 5 percent. Steeper grades may be allowed in special circumstances with the written approval of DOA. The minimum desirable grade is 0.6 percent; flatter values than this shall be reviewed with DOA Engineering.

## E. Clearances

1. Minimum “Clear Zone” widths for horizontal clearances shall be established according to AASHTO Roadside Design Guide and it shall be based on traffic volume, speed and embankment slopes. Minimum vertical clearance shall be 16 feet over city of Atlanta streets, 16 feet 6 inches over Fulton and Clayton County streets, 17 feet 6 inches over state routes and interstate highways. Minimum vertical clearance shall be 16 feet 6 inches over airport roads. Railroad vertical clearances shall be 23'6”, unless otherwise noted.

## F. Cross Slopes

1. Cross section elements should be designed to meet the requirements of “A Policy on Geometric Design of Highways and Streets”, current edition. Normal crown cross slope shall be 0.02 ft/ft. A maximum superelevation rate of 0.04 ft/ft shall be utilized. In design situations where site-specific geometric constraints require a maximum superelevation rate greater than .04 ft/ft to accommodate the design speed, P&D Engineering staff will review these situations on a case-by-case basis.

## G. Lane Width

1. The desirable lane width shall be 12 feet. Any lesser lane width must receive prior written approval from DOA.

H. Roadway Width

1. The desirable paved roadway width shall be 24 feet for two-way traffic (not including paved shoulders or 30" curb and gutter). The minimum one-way roadway width shall be 16 feet.

**12.0 Pavement Design**

- A. The roadway pavement shall be designed to accommodate current and projected traffic axial structural load needs in a safe, durable, and cost-effective manner. All pavement structures shall be either bituminous concrete or Portland cement concrete, as determined by P&D Engineering. The different pavement areas shall be delineated in the plans. The bituminous concrete pavement section design will be provided by P&D Engineering. The Portland cement concrete pavement sections shall be as follows:

Pavement	Surface	Sub-base
<u>Surface</u>	<u>Course</u>	<u>Sub-base</u>
Access and Circulation Road	10" PCC	9" Soil Cement
Loading Zones, Curbside Roads	10" PCC	9" Soil Cement

- B. Portland cement concrete pavement shall be designed with an 18-foot maximum desirable transverse joint spacing. The length/width ratio for the slabs should be in the range of 1.25 – 1.50. Using this criterion, a two-lane roadway with 12-foot lanes would have a maximum transverse joint spacing of 18 feet. Transverse joints shall be provided with load transfer dowels. Longitudinal joints in the center of the roadway shall be tied joints. Expansion joints shall be provided at junctures with structures. Joint details shall be as indicated on the Standard Drawings.

**13.0 Drainage**

- A. The roadway surface elevation shall be set and designed in a manner to prevent roadway overtopping and flooding. The water falling on the roadway area shall be collected and drained away from the roadway with either a gutter longitudinal system with strategically located inlets and/or catch basins or a side ditch. The inlets shall be spaced so that the gutter spread resulting from a 10-year storm shall not extend beyond the half point mark of the outside lane measured from the edge of travel way. For curbed roadways, at low points in the profile, flanking inlets shall be used on both sides of the low point inlet, to maintain the spread criteria previously described. An exception to designing low point inlets and piping for a 10-year storm shall be when low point inlets are sumped in a cut section with no provisions for alternate drainage. Sumped inlets and piping shall be designed for a 50-year storm.
- B. Low point inlets shall be checked hydraulically for spread assuming 50% clogging of the grate or curb opening, as appropriate. Underdrains shall be used on permanent roadways to provide positive drainage for the subgrade and to protect against water that seeps through cracks in the pavement or from the rise of the underground water table. Roadway drainage facilities shall be analyzed and designed in accordance with the ATL Design Standards - Airfield Paragraphs 5.0 Drainage and 6.0 Subsurface Drainage.

**14.0 Erosion Control**

- A. Temporary and permanent erosion control measures shall be provided during construction and as permanent features of the roadway system. All erosion and sedimentation control measures shall be designed according to the standards listed in the "Manual for Erosion and Sediment Control in Georgia". When establishing permanent erosion control measures the objective shall be to provide vegetation that will be an aid to aesthetics and safety and will be easy to maintain.

## 15.0 Signing, Marking, and Striping

- A. All signing, marking, striping and signals used on ATL roadways shall comply with the Manual on Uniform Traffic Control Devices (MUTCD) and substitutions, alterations or additions shall not be acceptable unless specifically directed and approved by DOA. Thermoplastic markings may be used if required and directed by DOA. In addition, roadway way-finding signs shall be developed and coordinated with the DOA P&D Graphics Unit.
- B. All traveling lanes and raised crosswalks shall be marked and striped with painted lines. Direction arrows and pavement markings shall be used to supplement signs in conveying certain messages or directions. Pedestrian crosswalk markings and curb cut ramps shall be placed at all intersections, unless specifically directed otherwise in writing by DOA.

## 16.0 Shoulders

- A. Shoulders shall be provided where there are no curbs. They shall be 10 feet wide minimum and they shall be paved 6 feet beyond the edge of the paved traveling lanes. Shoulders will be sloped at a maximum 4% cross slope down from the roadway in tangent sections. In transitional and superelevated sections, maximum breakover between the outer driving lane and the shoulder shall be 7%. In high embankment fills, guardrail should be used in lieu of flattening the fill side slopes, which are normally set at 2 horizontal to 1 vertical. Note that the use of guardrail may involve widening of the embankment in certain locations. In cuts, ditches must be provided if a shoulder section is used, and line of sight should be consistent with stopping sight distance for the given design speed.
- B. Where curbs are used, the adjacent shoulder width shall be a minimum of 8 feet from face of curb to shoulder P.I. This width may be increased when required to meet criteria for clear zones, utilities, lighting, signage and guardrail.
- C. Non-breakaway objects in the clear zone, as defined by the Roadside Design Standards, shall be protected by barrier or guardrail.

## 17.0 Sidewalks

- A. To be determined by demand and the location of the facility in relationship with surrounding facilities. The desirable width shall be 6 feet, while the minimum acceptable width shall be 4 feet. See section 7.0 for minimum and desirable sidewalk width in the loading zones. Contraction joints in sidewalks should divide the sidewalk surface into approximately square panels with a maximum joint spacing of six feet in both longitudinal and transverse directions. Provide expansion joints at junctures with structures, other sidewalks, at curb returns, and where the sidewalk abuts curbs.

## 18.0 Driveways

- A. For ATL driveways the maximum desirable slope is five percent to accommodate large vehicles serving industrial facilities. Driveways that connect to other than ATL roadway facilities shall be designed in accordance with the requirements of the agency having jurisdiction for that roadway. There shall be no obstructions that restrict visibility at driveway exits. The driveway width shall be designed to provide turning space for the design vehicle without the design vehicle having to encroach on the opposing lane to turn into and out of the driveway.

## 19.0 Right-of-Way

- A. Right of way lines are not typically required inside the airport boundary. Outside of the airport boundary, right of way should be determined by the type and width of facility, maintenance needs, utilities and space for sign supports.

## 20.0 Fencing

- A. To be coordinated with the AOA limits and determined by security, land ownership, safety, and overall project need as established in the project scope.

## 21.0 Roadway Signals and Lighting

- A. Roadway Signals
  - 1. The electrical systems for the traffic control devices must correlate with and conform to the standards as approved by the Authority having jurisdiction and the Federal Highway Administration (FHWA) and set forth in the *Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)*.
- B. Roadway Lighting
  - 1. All roadway luminaire poles are subject to airspace restrictions, based on FAR Part 77, TERPS, and ICAO rules. These lighting installations must be reviewed by DOA Engineering.

## 22.0 Roadway Structures

- A. Design criteria for roadway structures are defined elsewhere in the Design Standards.

## 23.0 Way Finding/Graphics

- A. To be determined by the traffic analysis and design requirements and by the advance warning and notice signs with considerations for weaving and merging movements in proximity to entrance and exits points.

## 24.0 List of Applicable Design Standards and Criteria

- A. A Policy on Geometric Design of Highways and Streets, Published by the American Association of State Highway and Transportation Officials (AASHTO)
- B. Roadside Design Guide, published by the American Association of State Highway and Transportation Officials (AASHTO)
- C. Manual for Erosion and Sediment Control in Georgia, published by the Georgia Soil and Water Conservation Commission
- D. Standard Specifications Construction of Transportation Systems, published by the Georgia Department of Transportation
- E. Highway Capacity Manual, published by the Transportation Research Board, National Research Council
- F. Manual on Uniform Traffic Control Devices, published by the U. S. Department of Transportation, Federal Highway Administration
- G. Manual on Drainage Design for Highways, published by the Georgia Department of Transportation
- H. Standard Practice for Roadway Lighting, Roadway Sign Lighting  
Document Number: IESNA RP-19
- I. Standard Practice for Roadway Lighting Roadway Lighting ANSI Approved Document  
Number: ANSI/IESNA RP-8
- J. Standard Practice for Roadway Lighting American National Standard Practice for Tunnel Lighting Document Number: ANSI/IESNA RP-22

# Hartsfield-Jackson Atlanta International Airport

City of Atlanta

Department of Aviation

Office of Infrastructure Planning & Development

## **Airport Facilities Landside/ Airside New Construction and Modifications**

*Design Standards*

Civil Engineering -  
Drainage

# Design Standards Civil Engineering – Drainage

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## **Design Standards Civil Engineering – Drainage**

### **1.0 Overview**

- A. This design element sets forth standards to be used in the preparation of construction documents for Airport projects. It is the Department of Aviation's (DOA's) goal to have Airport project designers work to a common standard with respect to engineering design criteria specific to Hartsfield-Jackson Atlanta International Airport (ATL).
- B. The preparation of this standards manual assumes that the designer has access to appropriate FAA (Federal Aviation Administration) publications, particularly Advisory Circulars that set forth minimum standards for Airport design. Since these are available publicly through FAA district offices and the FAA website, they are not re-created in this manual.
- C. The design criteria and standards presented herein are expected to cover the majority of project work encountered at ATL. However, it is recognized that projects will occasionally require a divergence from these standards because of site-specific conditions. In such cases, the designer is expected to work from a base of sound engineering judgment and experience, and deviations from the standards will be reviewed and approved in accordance with Administrative Procedures of the Design Standards.

### **2.0 Airfield Drainage**

#### **A. General Background**

- 1. The Airport has an extensive storm drainage system with primary outlets to the Flint River and Sullivan Creek. There are also smaller outlets into Mud Creek on the east side of the Airport. The system has been designed over many years under criteria that generally conform to FAA AC 150/5320-5B, with a few exceptions. The AC suggests using a 5-year design storm and allowing for ponding storage at inlets. The ATL system is generally designed for full interception at inlets (little or no ponding) and the design storm used has been adjusted for various reasons at various times. Originally, trunk lines were designed for 10-year events, with small feeder lines designed for 5-year events. The criteria were later modified to 10-year events for all pipes to provide some additional safety factors and to get in line with Department of Transportation (DOT) practice that currently use 10-year storms in urban areas. An exception is the Flint River conduits, which were based on flowing full in a 50-year event, unconstrained.
- 2. In a situation where a new project requires connection to an existing drainage system, but the existing system appears to have been designed for a storm less than 10-year, the designer should run the computations for a 10-year storm and check the level of the hydraulic gradient. If the Hydraulic Grade Line (HGL) can be maintained at least two feet below finished pavement, the system may be deemed acceptable.
- 3. The Airport's runoff currently goes through detention at various locations: the original sites are at the Flint River basin between the Runways 27L and 27R; and at Riverdale Road south of the Park-Ride facility. These basins were designed under conservative assumptions of future Airport development, and therefore, additional upstream basins should not be required for these outfalls.
- 4. Another basin was created for the South Cargo Area and accommodates a small portion of Runway 10-28 drainage. Additional detention basins have been constructed with Runway 10-28 at three locations along the runway length. Another basin has been constructed near Taxiway V, in the northwest quadrant of the Airport. This basin functions as a pumped storage facility.

**B. Criteria**

1. Recommended design criteria for the airside drainage system are presented in Tables 2 and 3.

**TABLE 2  
 AIRSIDE DRAINAGE DESIGN STORM**

Drainage system	Design Storm
Laterals and trunks	10-Year
Slope Drains	25-Year
Flint River and Sullivan Creek conduits	50-Year
Detention Storage	50-Year*
<b>Notes:</b>	
1. * Unless dictated otherwise by local jurisdiction	

**TABLE 3  
 AIRSIDE DRAINAGE DESIGN METHODOLOGY**

Drainage system	Methodology
Slope Drains, laterals and trunk systems	Rational Method
Detention or Flood Protection	SCS

**C. Time of Concentration**

1. Next to surface area, concentration time is the most sensitive parameter governing peak flows from a watershed. It is recommended that on large basins, concentration time be computed by two different methods as a check for reasonableness. Lag time (with appropriate modifiers as outlined in the Manual for Erosion and Sediment Control in Georgia) and the time of concentration ( $T_c$ ) procedure outlined in SCS, now Natural Resources Conservation Service (NRCS), Manual TR-55 give good results. For small sites where the primary component of  $T_c$  is overland flow, the average velocity chart in the Erosion Control Manual is considered adequate. Note that time of concentration should never be taken at less than 5 minutes, as rainfall charts are not reliable for lesser values.

**D. Drainage Structures**

1. The user is advised that any drainage inlet, manhole, or structure located within aircraft pavement or anywhere in a safety area is to be designed for direct aircraft loading. Outside of the safety areas, normal H-20 highway loads can be used.

**E. Storm Detention**

1. Stormwater detention will only be used where directed by DOA Engineering. When these systems are used on Airport, a 50-year design without upstream flooding should be used. For off-Airport locations, the design storm(s) should satisfy the criteria of the local jurisdiction but will not be less than a 50-year storm.

**F. Water Quality**

1. Fueling aprons constructed since the 1970's have been equipped with holding tanks and diversion systems to capture the first flush rainfall and route it to sanitary sewers. This

practice should be continued until such time as environmental regulations demand more stringent treatment. An extensive 1975 study of apron runoff set the practical first flush quantity as the first 0.03 inches of rainfall spread over the entire apron.

#### G. Storm Sewers

1. Permanent storm sewers are to be designed as reinforced concrete pipe, strength class as determined by the designer for the anticipated live and dead load conditions. Where future conditions are known that may increase the load on pipes, these future conditions shall be the basis of design. Slope drains and/or pipes known to be temporary may be corrugated metal or polyethylene, with strength class as required for the temporary loading conditions. Calculations for pipe strength classes are to be submitted along with drainage design calculations as part of the design deliverables.
2. Hydraulically, storm sewer pipes should generally be designed to flow full or near full at the design storm flow, except where terrain or conflicting objects dictate otherwise. Pipes should only be set as deep as needed to accommodate their own friction slope required by the design flow, and to avoid conflicts with other existing or proposed utilities.
3. For airfield and roadway work, the smallest storm sewer that should be used is 15" diameter. Where pipe sizes are increasing downstream over the length of a sewer run, the crown of the outgoing pipe should be matched with the crown of the lowest incoming pipes, unless other physical constraints are governing.
4. For design of new pipe systems, use a Manning's n- value of 0.012 for concrete pipe. When working with older, existing pipe systems, the n-value may be increased, but no higher than 0.014.
5. Slope drainpipes on embankments shall be designed as inlet-controlled culverts, spaced to restrict headwater to a maximum of 1.0 feet in a 25-year storm.
6. Storm drainage conduits should be reinforced concrete, with the exception that corrugated metal or corrugated polyethylene may be considered for temporary applications. Proposed concrete pipes must be evaluated by the designer for adequate strength, considering site specific live and dead loads. The supporting strength criterion to be used is the D-crack load. All other materials are subject to approval by the DOA following alternate material submittals outlined in the Administrative Manual.

### 3.0 Airfield Subsurface Drainage

- A. The Pavement Section Design Manual dated June 2003 prepared by the Facilities Management Group addresses the design of subsurface drainage systems in Chapter 9 of said report. Perforated underdrains are incorporated into all aircraft pavements at ATL as protection against high groundwater and slow draining soils. For airfield pavements, ATL utilizes a system of 6-inch perforated pipes distributed under the pavement at roughly 100-foot intervals and feeding into 8-inch collectors. From there, the underdrains are outlet through 8" non-perforated pipes. It is DOA Engineering's strong preference that underdrain outfalls should be connected directly to inlets or manholes in the larger drainage system. In cases where this is not practical, underdrain outfalls at ditches should be protected with concrete encasement and varmint screens.

### 4.0 Roadway Drainage

- A. The roadway surface elevation shall be set and designed in a manner to prevent roadway overtopping and flooding. The water falling on the roadway area shall be collected and drained away from the roadway with either a gutter longitudinal system with strategically located inlets and/or catch basins or a side ditch. The inlets shall be spaced so that the gutter spread resulting from a 10-year storm shall not extend beyond the half point mark of the outside lane measured from the edge of travel way. For curbed roadways, at low points in the profile, flanking inlets shall be used on both sides of the low point inlet, to maintain the spread criteria previously described. An exception to designing low point inlets and piping for a 10- year storm

shall be when low point inlets are sumped in a cut section with no provisions for alternate drainage. Sumped inlets and piping shall be designed for a 50-year storm.

- B. Low point inlets shall be checked hydraulically for spread assuming 50% clogging of the grate or curb opening, as appropriate. Underdrains shall be used on permanent roadways to provide positive drainage for the subgrade and to protect against water that seeps through cracks in the pavement or from the rise of the underground water table. Roadway drainage facilities shall be analyzed and designed in accordance with the sections 2.0 Airfield Drainage and 3.0 Airfield Subsurface Drainage of this document.

## **5.0 Surface Parking Grading/Drainage**

- A. Parking lots shall be graded so that storm water runoff is directed away from areas where pedestrians will walk. Low areas shall be kept away from the walkways leading to the Airport terminal entrances. Minimum acceptable grades shall be as required to provide positive drainage and maximum shall be 5%. Pedestrians should be able to exit their cars, unload their luggage and walk to the entrance without walking into accumulated or standing runoff. Inlets shall not be installed in the aisles. Curb inlets located at the curbs of landscaped islands shall be preferable, but drain inlets are acceptable. Slotted drains may be used to prohibit the flow spread outside the desirable limits where grading does not allow the placement of inlets. Slotted drains should not be placed where pedestrians will walk. Note Americans with Disabilities Act (ADA) accessible route requirements where appropriate.

## **6.0 Grassing**

- A. Grass is to be planted in accordance with the Airport standard seeding and mulching specifications. Asphalt spray mulching is required in locations where seeding areas are subject to jet blast, and in areas where the finished surface gradient exceeds 5.0%. Sod may be used in a limited basis as approved by DOA Engineering. This would normally be in a protective strip along the edge of roadway or airfield pavement shoulders.

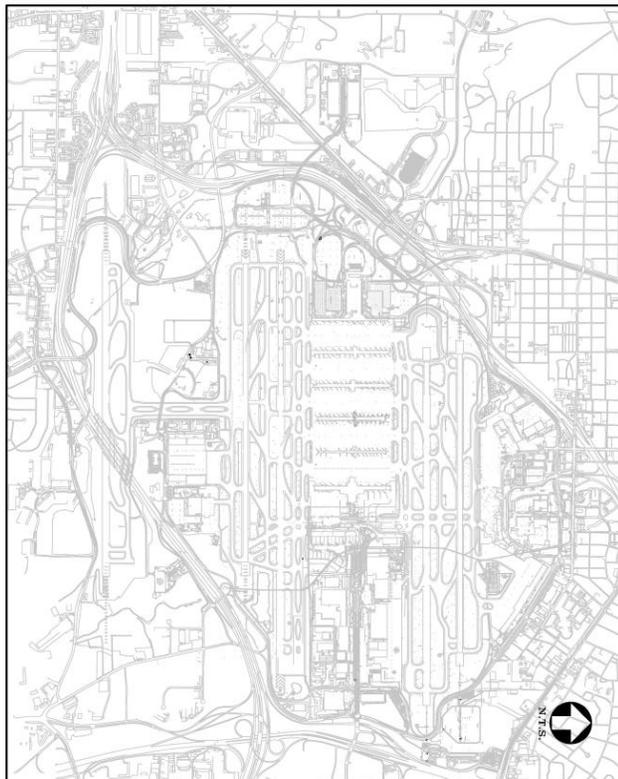
## **7.0 Erosion Control**

- A. Temporary and permanent erosion control measures shall be provided during construction and as permanent features of the roadway system. All erosion and sedimentation control measures shall be designed according to the standards listed in the "Manual for Erosion and Sediment Control in Georgia". When establishing permanent erosion control measures the objective shall be to provide vegetation that will be an aid to aesthetics and safety and will be easy to maintain.

## **8.0 List of Applicable Design Standards and Criteria**

- A. Manual for Erosion and Sediment Control in Georgia, published by the Georgia Soil and Water Conservation Commission
- B. Standard Specifications Construction of Transportation Systems, published by the Georgia Department of Transportation
- C. Drainage Design for Highways, published by the Georgia Department of Transportation
- D. FAA publications, particularly Advisory Circular 15/5320-5D Airport Drainage Design
- E. Georgia Storm Water Management Manual published by the Atlanta Regional Commission

**CITY OF ATLANTA**  
**HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT**  
**DOA CIVIL STANDARD DETAILS**



CHANGES TO THESE STANDARDS SHALL  
BE APPROVED BY DOA IN ADVANCE OF  
SUBMITTAL.

DOA CIVIL STANDARD DETAILS

  
CITY OF ATLANTA, GEORGIA  
Hartsfield-Jackson  
Atlanta International Airport  
DEPARTMENT OF AVIATION  
PLANNING & DEVELOPMENT

DOA CIVIL STANDARD DETAILS

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STD-00-100

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DWG NO.	SHEET NO.	SHEET TITLE	RELEASE STATUS SUMMARY						COMMENTS		
			ISSUED	REV1	REV2	REV3	REV4	REV5		REV6	
1	STD-00-100	Cover Sheet	06/20/2014	08/20/19							
2	STD-00-200	DOA Civil Standard Details Index	06/20/2014	08/20/19	06/20/20						
3	STD-00-201	DOA Civil Standard Details Index	06/20/2014	08/20/19	06/20/20						
<b>STD-01 AIRSIDE - RUNWAYS TAXIWAYS AND APRONS</b>											
4	STD-01-100	Asphalt Trench Pavement Sections	06/20/2014	08/20/19	06/20/20						
5	STD-01-200	Typical Pavement Sections ALVR	06/20/2014	08/20/19							
6	STD-01-300	Aspen Underdrain Details - New Pavement	06/20/2014								
7	STD-01-400	Underdrain Details - Replacement Projects	06/20/2014								
8	STD-01-500	Asphalt Interlocks	06/20/2014								
9	STD-01-600	Asphalt Interlocks Detail Type A'	06/20/2014	08/20/19							
10	STD-01-601	Interlocks Detail Type B' and Type B' Modified	06/20/2014	08/20/19							
11	STD-01-602	Interlocks Detail Type C'	06/20/2014	08/20/19							
12	STD-01-603	Seam Detail	06/20/2014	08/20/19							
13	STD-01-604	Precast Drainage Panel Detail	06/20/2014								
14	STD-01-605	Miscellaneous Drainage Details	06/20/2014								
15	STD-01-606	Pavement Joint Details - New Projects	06/20/2014								
16	STD-01-607	Pavement Joint Details - Replacement Projects-1	06/20/2014								
17	STD-01-701	Pavement Joint Details - Replacement Projects-2	06/20/2014								
18	STD-01-702	Edgk. Pavement Removal and Replacement for Fuel Hydrants	06/20/2014	08/20/19							
19	STD-01-703	Spall and Joint Repair Details	06/20/2014								
20	STD-01-704	Typical Small Repair Repair Placement Detail	06/20/2014								
21	STD-01-705	Reinforced Concrete Trench Repair Details	06/20/2014								
22	STD-01-800	Aspen Striping and Marking	06/20/2014								
23	STD-01-801	Aspen ALVR Striping and Signage	06/20/2014	3/16/2020							
24	STD-01-802	Runway Striping and Marking-1	06/20/2014								
25	STD-01-803	Runway Striping and Marking-2	06/20/2014								
26	STD-01-804	Taxiway Striping, Marking, and Signage	06/20/2014								
27	STD-01-805	Taxiway Striping and Marking	06/20/2014								
28	STD-01-900	Miscellaneous Airfield Details	06/20/2014								
<b>STD-02 LANDSIDE - ROADS AND PARKING</b>											
29	STD-02-100	Typical Pavement Sections - Roadways	06/20/2014	08/20/19							
30	STD-02-101	Typical Pavement Sections - Parking	07/14/2016								
31	STD-02-105	Grade Break Standard	06/24/2020								
32	STD-02-200	Joints - ALVR or Landside Roads	06/20/2014	08/20/19	06/20/20						
33	STD-02-300	Landside Striping and Marking Details	06/20/2014								
34	STD-02-400	Landside Signage	06/20/2014								
35	STD-02-500	Landside Drainage-1	06/20/2014								
36	STD-02-601	Landside Drainage-2	06/20/2014								
<b>STD-03 GENERAL DETAILS</b>											
37	STD-03-100	Settlement Platforms	06/20/2014								
38	STD-03-200	Chain Link Fences - 1	06/20/2014								
39	STD-03-301	Chain Link Fences - 2	06/20/2014	08/20/19	07/20/20						
40	STD-03-302	Chain Link Fences - 3	06/20/2014	08/20/19							
41	STD-03-303	Chain Link Fences - 4	06/20/2014	08/20/19							
42	STD-03-304	Chain Link Fences - 5	06/20/2014	08/20/19							
43	STD-03-305	Chain Link Fences - 6	06/20/2014	08/20/19							
44	STD-03-306	Chain Link Fence - Signage	06/20/2014	08/20/19							
45	STD-03-307	Typical Grass Interceptor Installation	06/20/2014	08/20/19							
46	STD-03-308	Typical Grass Interceptor Installation	06/20/2014	08/20/19							
47	STD-03-309	Below Pavement Grass Interceptor Details	06/20/2014	08/20/19							
48	STD-03-310	Utility Shaft Detail For Interceptor Below Pavement	06/20/2014	08/20/19							
49	STD-03-311	Additional Pavement Removal	06/20/2014	08/20/19							
50	STD-03-312	Pipe Bedding Type B' and C', Paved Ditch Detail	06/20/2014	08/20/19							
51	STD-03-401	Concrete Pipe Collar, Cleanout, Cap for Exkkl, Inlet	06/20/2014								
52	STD-03-402	Manhole Detail For Existing or Proposed Pipe	06/20/2014	08/20/19							
53	STD-03-403	Manhole Detail For Existing or Proposed Pipe	06/20/2014	08/20/19							
54	STD-03-404	Manhole Detail For Existing or Proposed Pipe	06/20/2014	08/20/19							
55	STD-03-405	Warrent Bedding and Excavation Section	6/20/2014	08/20/19							
56	STD-03-406	Standard Manhole and Type E Inlet	06/20/2014								

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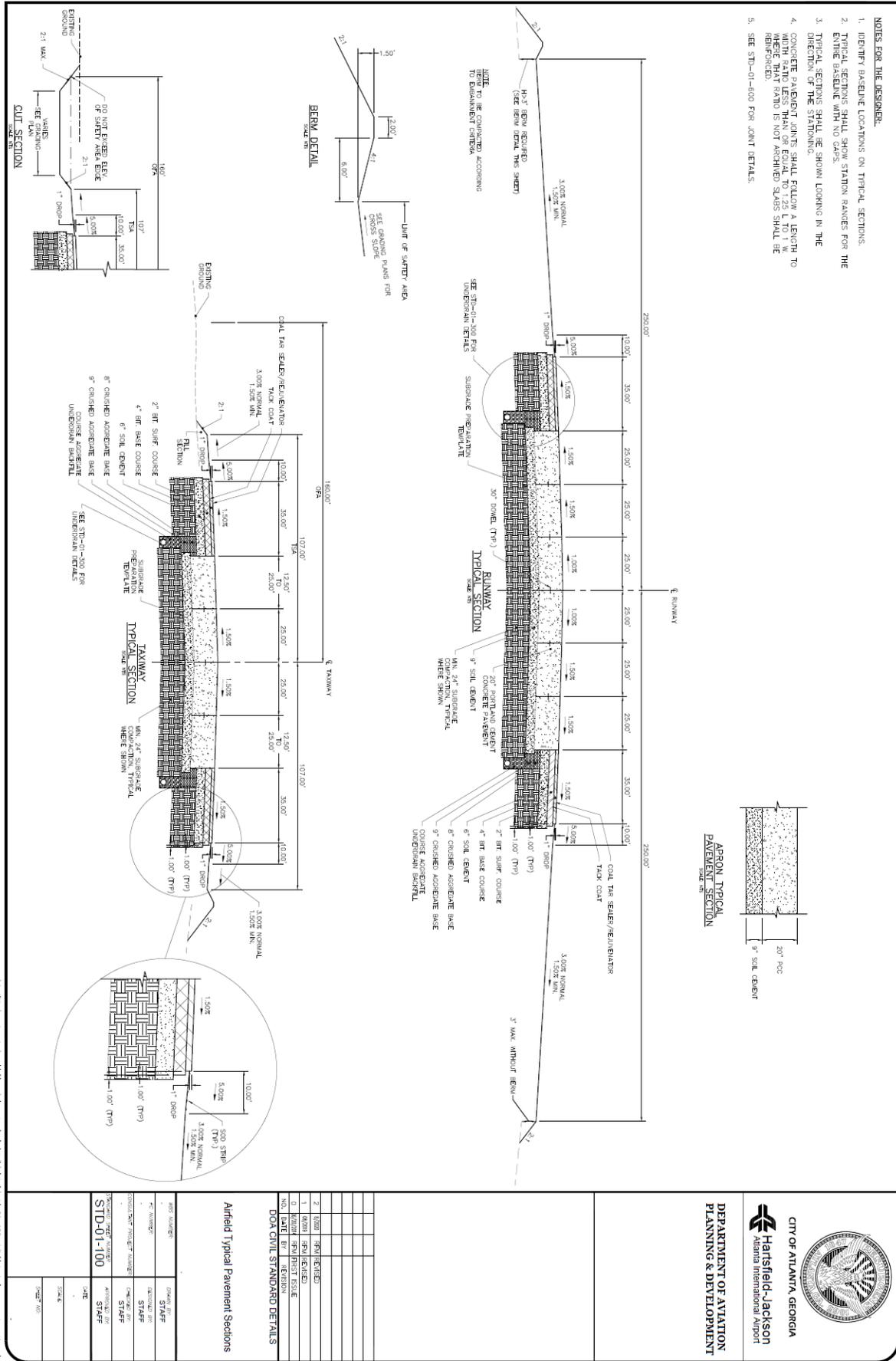
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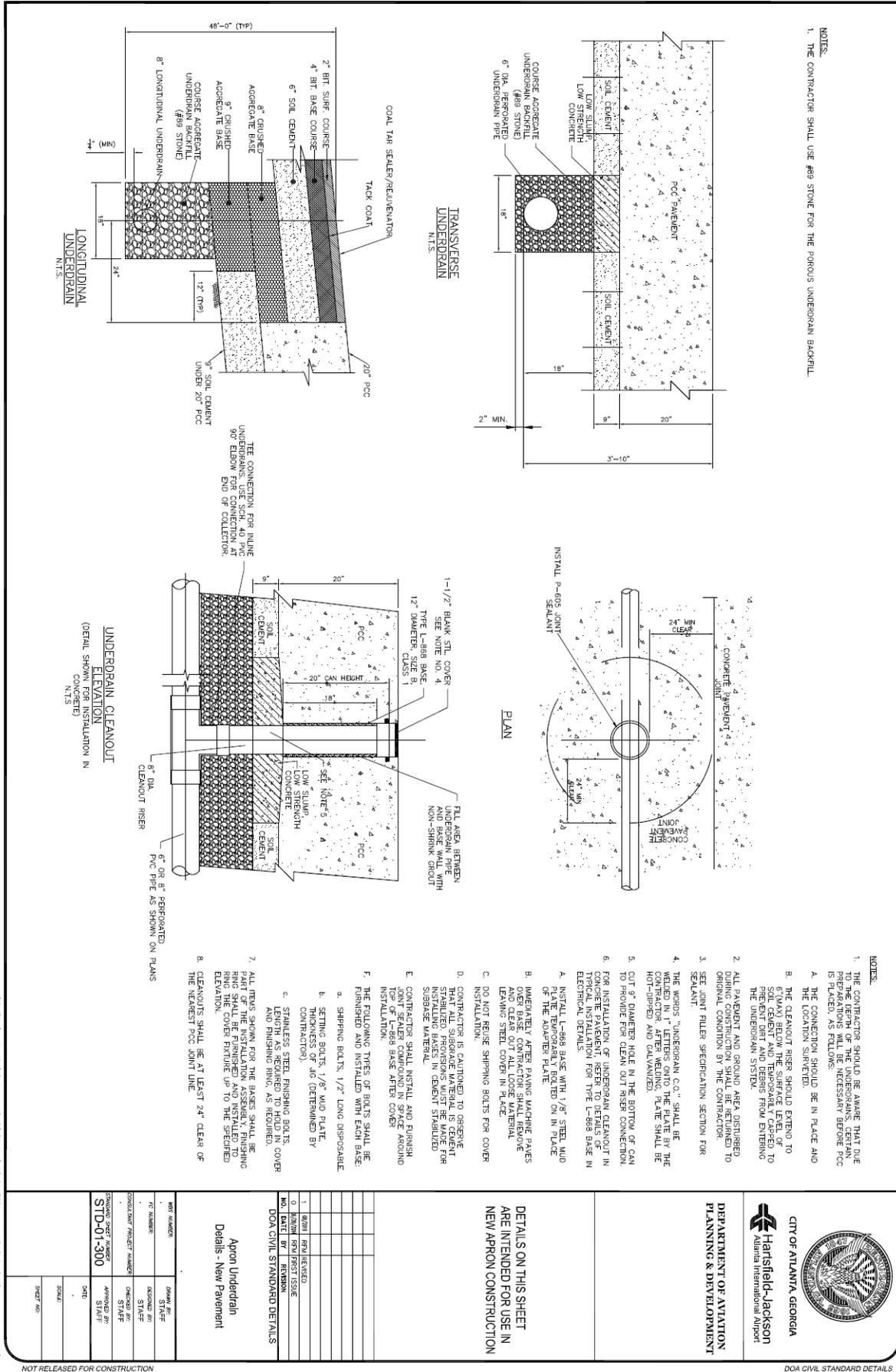
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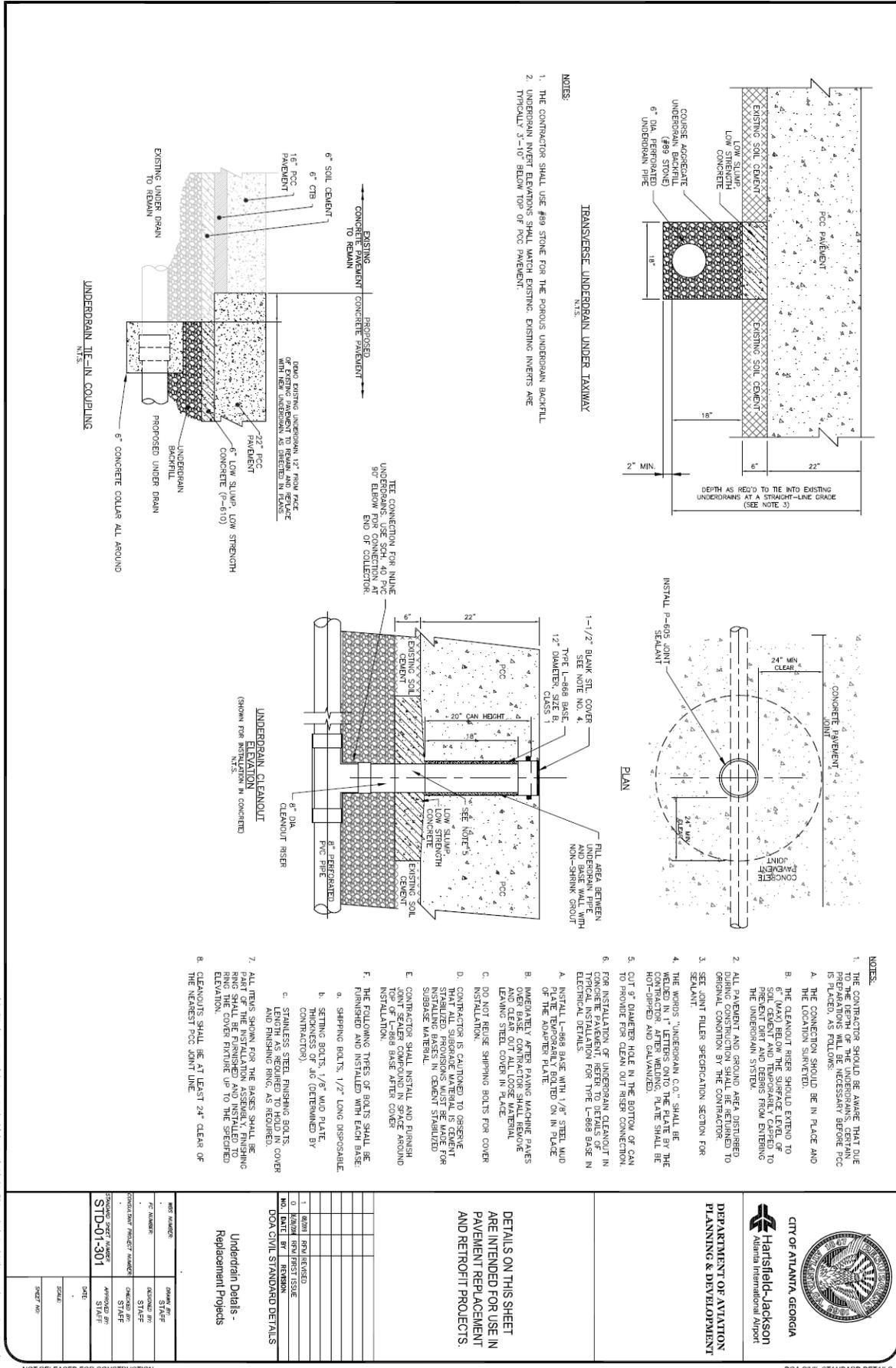
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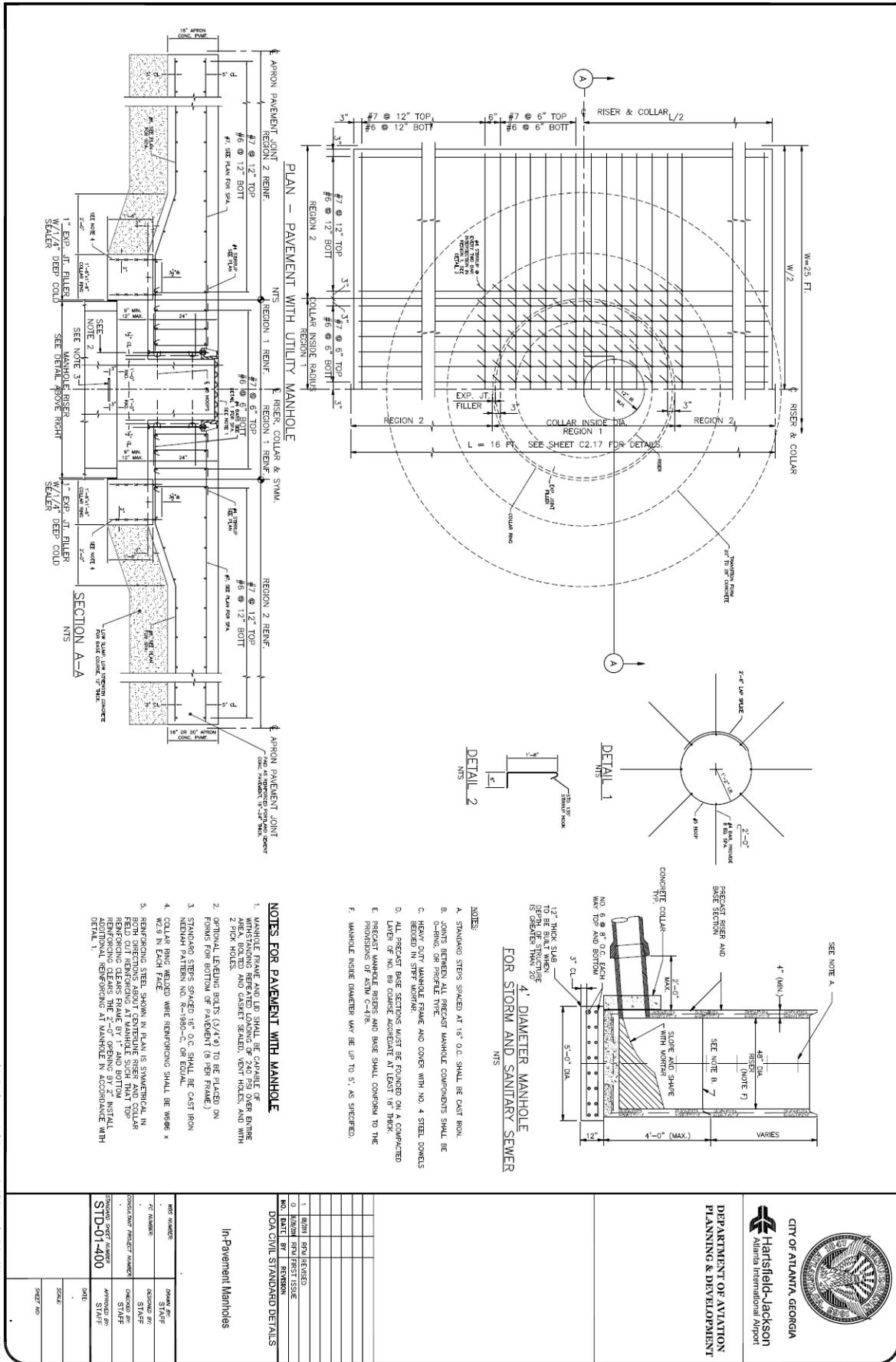


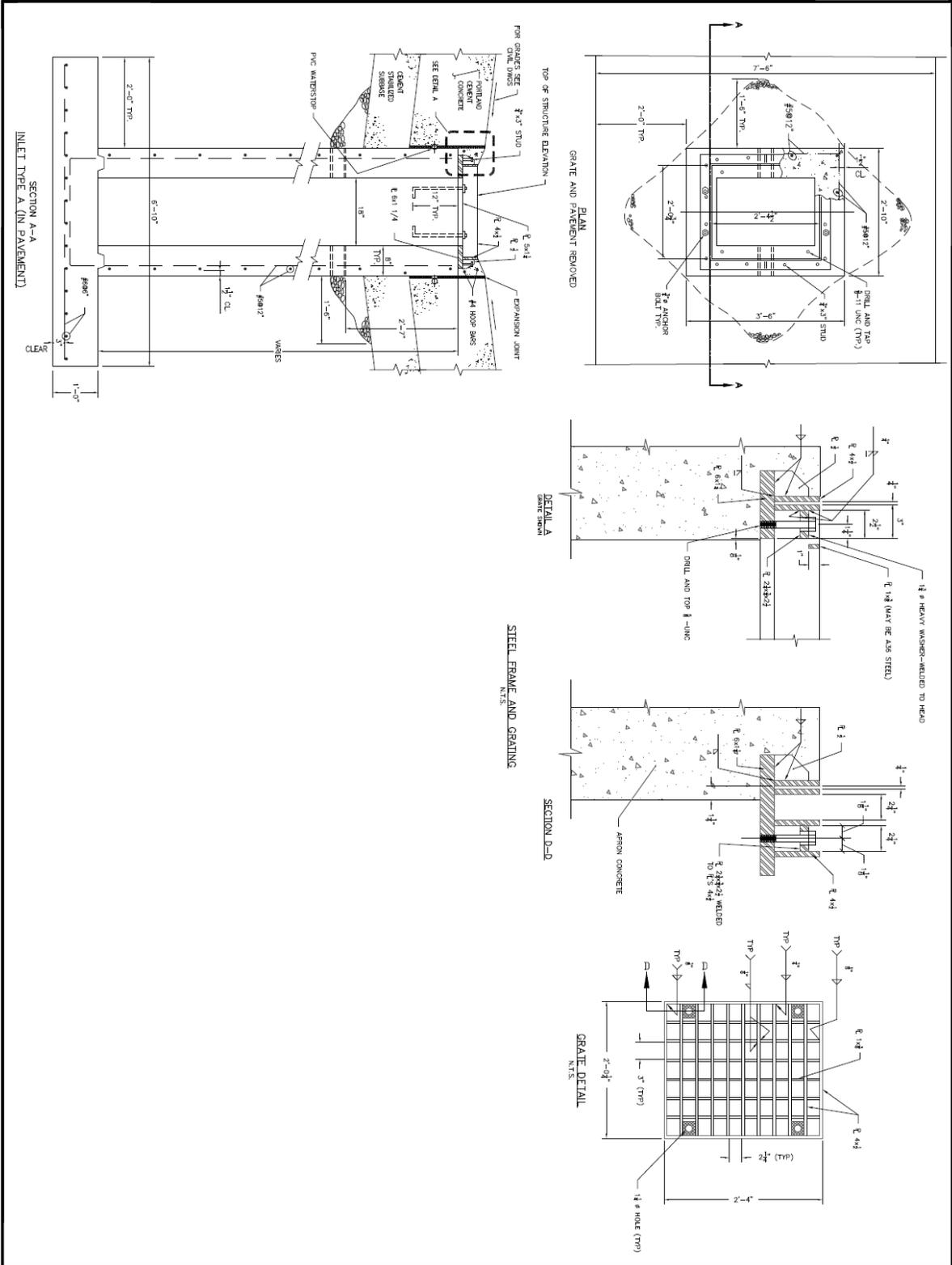












**REVISIONS**

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2			ADDED FROM REVISION

**NO. DATE BY REVISION**

**CONV. DATE PROJECT NUMBER**

**STANDARD SHEET NUMBER**  
STD-01-500

**APPROVED BY STAFF**

**SCALE:**

**SHEET NO.**

**City of Atlanta, Georgia**

**Hartsfield-Jackson**  
Atlanta International Airport

**DEPARTMENT OF AVIATION**  
PLANNING & DEVELOPMENT

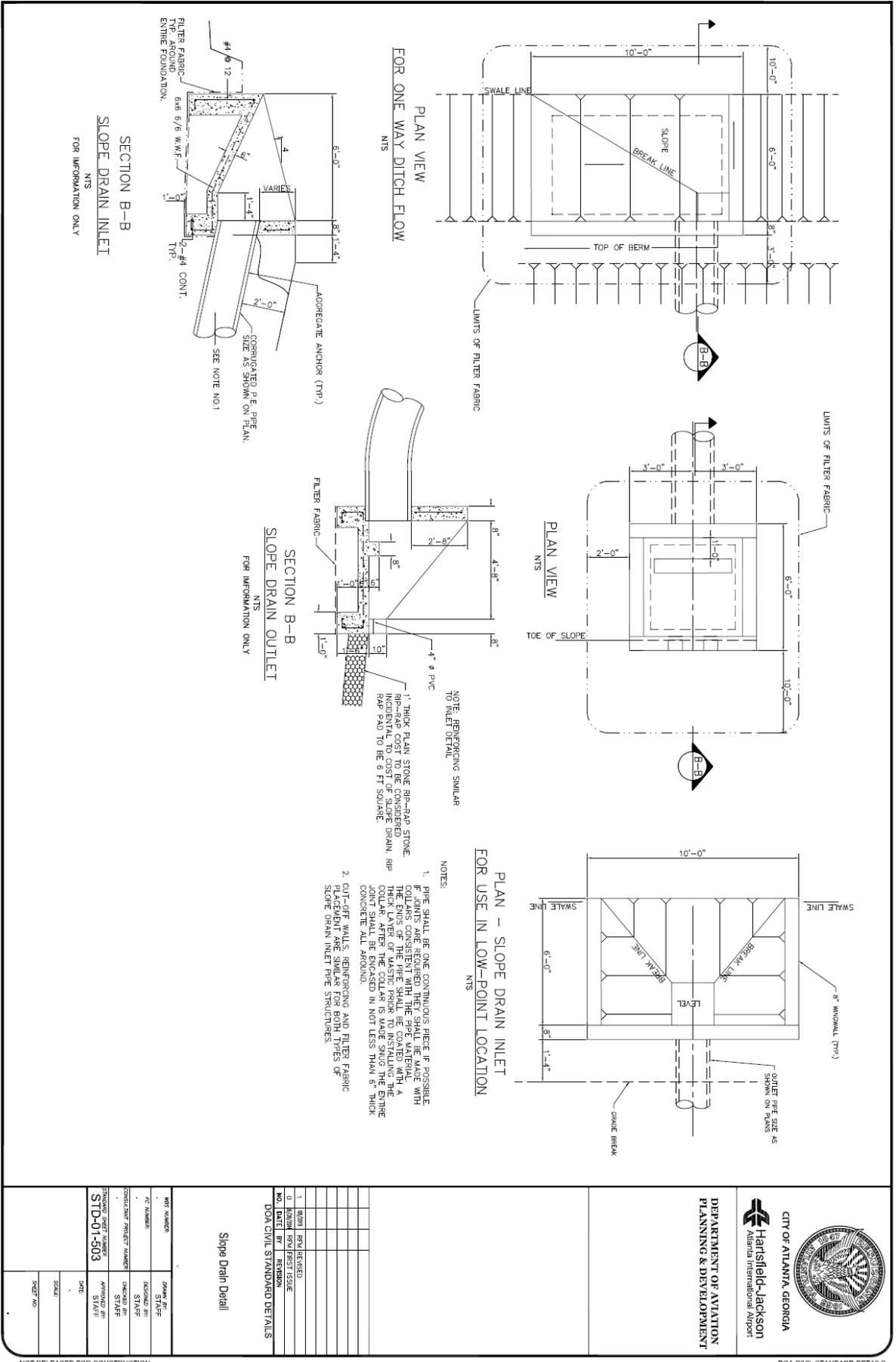
**In-Pavement Inlets**  
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NO.	DATE	BY	REVISION
1	01/20/2025	SPV	ISSUE
2	01/20/2025	SPV	REVISED

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CHECKED BY	DATE
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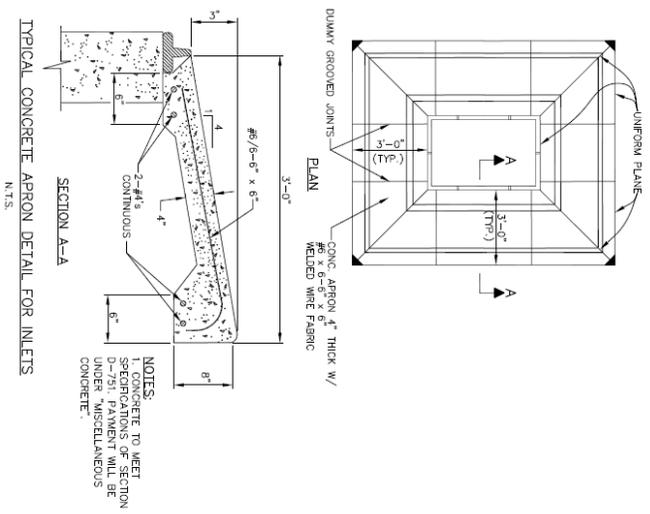
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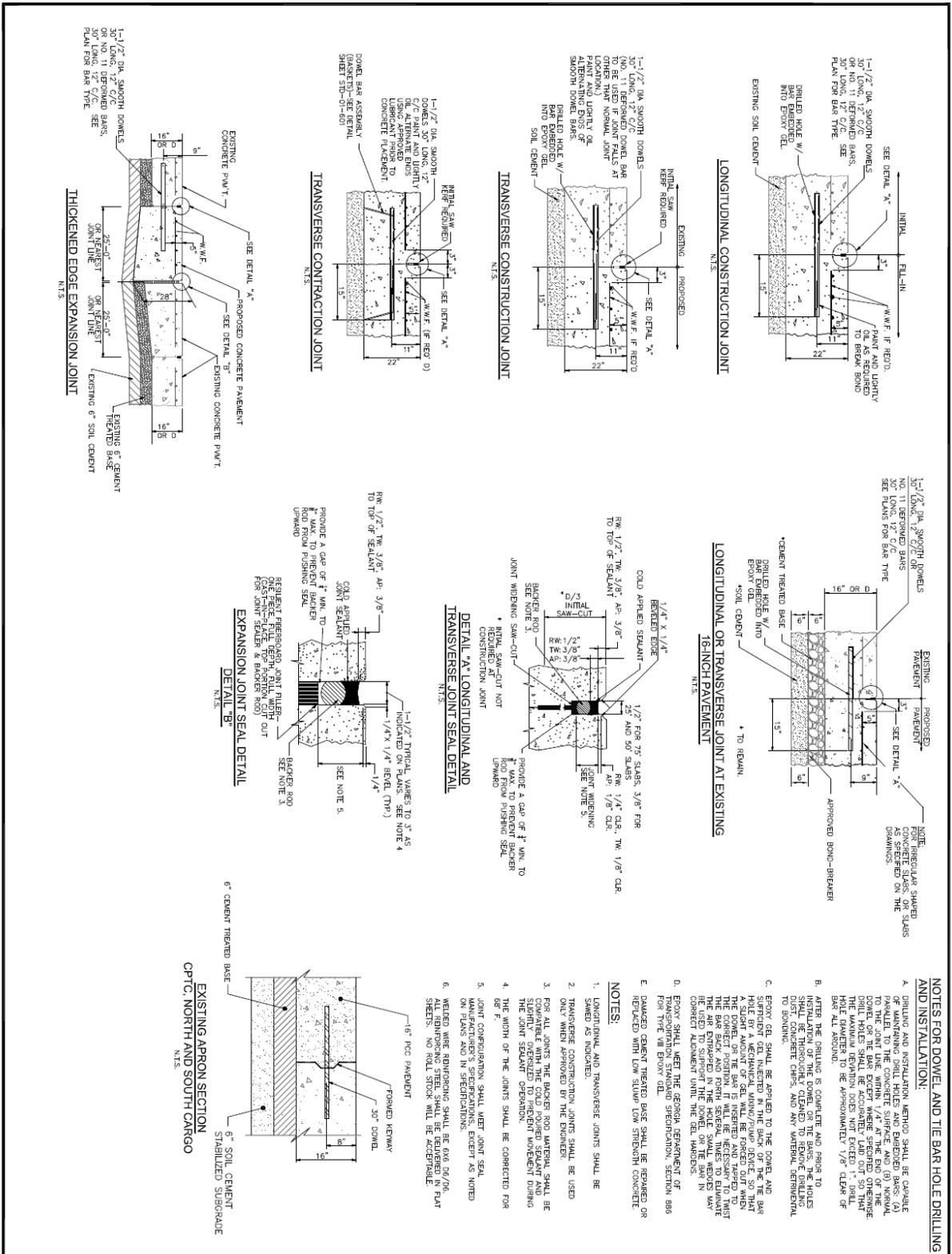
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**NOTES FOR DOME AND THE BAR-HOLE DRILLING AND INSTALLATION:**

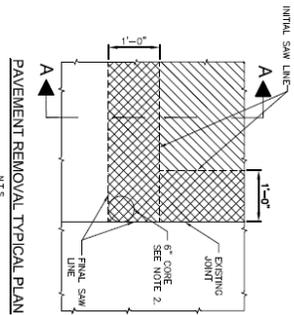
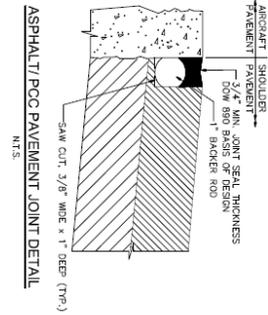
- DOME AND INSTALLATION METHOD SHALL BE CAPABLE OF WITHSTANDING DRILL HOLE AND EMBEDDED BARS (A) TO THE FULL DEPTH OF THE DOME AND (B) TO THE END OF THE DOME OR THE BAR EXCEPT WHERE SPECIFIED OTHERWISE. THE DOME SHALL BE REINFORCED WITH STEEL BARS TO THE MAXIMUM EXTENT POSSIBLE. THE MAXIMUM REINFORCEMENT DOES NOT EXCEED 1" DIAL HOLE DIAMETER TO BE APPROXIMATELY 1/8" CLEAR OF BARS ALL AROUND.
- AFTER THE DRILLING IS COMPLETE AND PRIOR TO THE INSTALLATION OF THE DOME, THE DRILLING HOLES SHALL BE THOROUGHLY CLEANED TO REMOVE DRILLING DUST, CONCRETE CHIPS, AND ANY MATERIAL DETRIMENTAL TO THE PROPER SETTING OF THE DOME.
- EPXY RESIN SHALL BE APPLIED TO THE DOME AND BARS PRIOR TO THE INSTALLATION OF THE DOME. THE BAR HOLE BY A MECHANICAL WINDING/PAUP DEVICE, SO THAT A SUFFICIENT AMOUNT OF GEL WILL BE FORCED OUT WHEN THE DOME IS INSTALLED. THE GEL SHALL BE APPLIED TO THE CORRECT POSITION. IT WILL BE NECESSARY TO TRIM THE BAR ENDS TO THE CORRECT POSITION. THE GEL SHALL BE USED TO SUPPORT THE DOME OR THE BARS IN CORRECT ALIGNMENT UNTIL THE GEL HARDENS.
- EPXY SHALL MEET THE GEORGIA DEPARTMENT OF TRANSPORTATION SPECIFICATION, SECTION 888 FOR THE "W" EPOXY GEL.
- DAMAGED CEMENT TREATED BASE SHALL BE REPAIRED OR REPLACED WITH LOW STRENGTH CONCRETE.

**NOTES:**

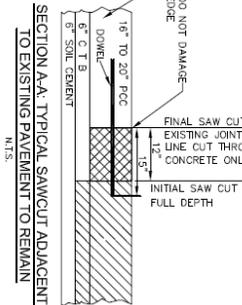
- LONGITUDINAL AND TRANSVERSE JOINTS SHALL BE SAVED AS INDICATED.
- TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED ONLY WHEN APPROVED BY THE ENGINEER.
- FOR ALL JOINTS THE BACKER ROD MATERIAL SHALL BE COMPATIBLE WITH THE COLD-POURED SEALANT AND THE JOINT SEALANT OPERATION.
- THE WIDTH OF THE JOINTS SHALL BE CORRECTED FOR 6" F.
- JOINT CONSTRUCTION SHALL MEET JOINT SEAL MANUFACTURER'S SPECIFICATIONS, EXCEPT AS NOTED ON PLANS AND IN SPECIFICATIONS.
- WELDED WIRE REINFORCING SHALL BE 6X6 96/96. ALL REINFORCING STEEL SHALL BE DELIVERED IN PLAT SHEETS. NO ROLL STEEL WILL BE ACCEPTED.



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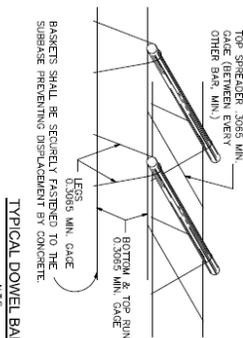
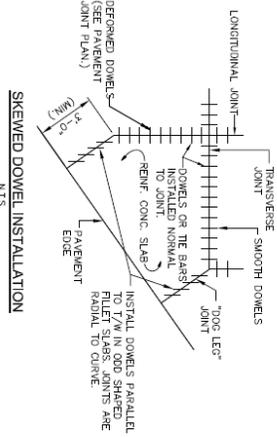


- DEMOLITION NOTES:**
1. ALL PAVEMENT EXPOSED FROM 1'-0\"/>
  2. NO SAW CUTS WILL BE PERMITTED TO EXIST. SECOND CUT THE CONTRACTOR SHALL MAKE TO THE FINISH SAW CUT LINE. ALL STABILIZED BASE COURSES THE CORNER OF DIAMETER OF THE CORES SHALL BE 8 INCHES.
  3. APPROVAL SAW CUTS WILL BE PERMITTED UPON THE DISCRETION.
  4. WHEN SAW CUTTING CONCRETE CONTRACTOR SHALL MAKE TWO SAW CUTS AS PER DETAIL. THE SHEET SHALL BE THROUGH CONCRETE ONLY FOLLOWING FINAL TO AVOID DAMAGING THE REMAINING EDGE.
  5. CONTRACTOR SHALL SPURFACE ALL EXISTING GEMENT STABILIZED BASE THAT IS DAMAGED DURING PAVEMENT DEMOLITION. THE SPURFACE SHALL BE PERMITTED AT THE DISCRETION OF THE CITY.

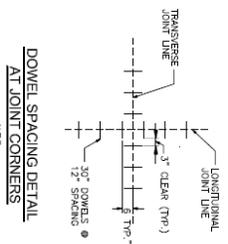


**LEGEND**

	FINAL CONC. PAVEMENT
	REPAIR ZONE
	FINAL CONC. PAVEMENT



- NOTE:** USED IN BASKETS SHALL CONFORM TO ASTM-A487 COLD CHAMFERED WIRE. ATTACHMENT MAY BE RESISTANCE TYPE WELDING. RESISTANCE WELDED EXCEPT FOR SPREADER WIRES WHICH MAY BE ARC WELDED.
1. DOWEL WIRE ATTACHMENT MAY BE RESISTANCE TYPE WELDING.
  2. RESISTANCE WELDED EXCEPT FOR SPREADER WIRES WHICH MAY BE ARC WELDED.



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**Hartsfield-Jackson**  
 Atlanta International Airport

**DEPARTMENT OF AVIATION**  
**PLANNING & DEVELOPMENT**

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1			ISSUE FOR REVIEW
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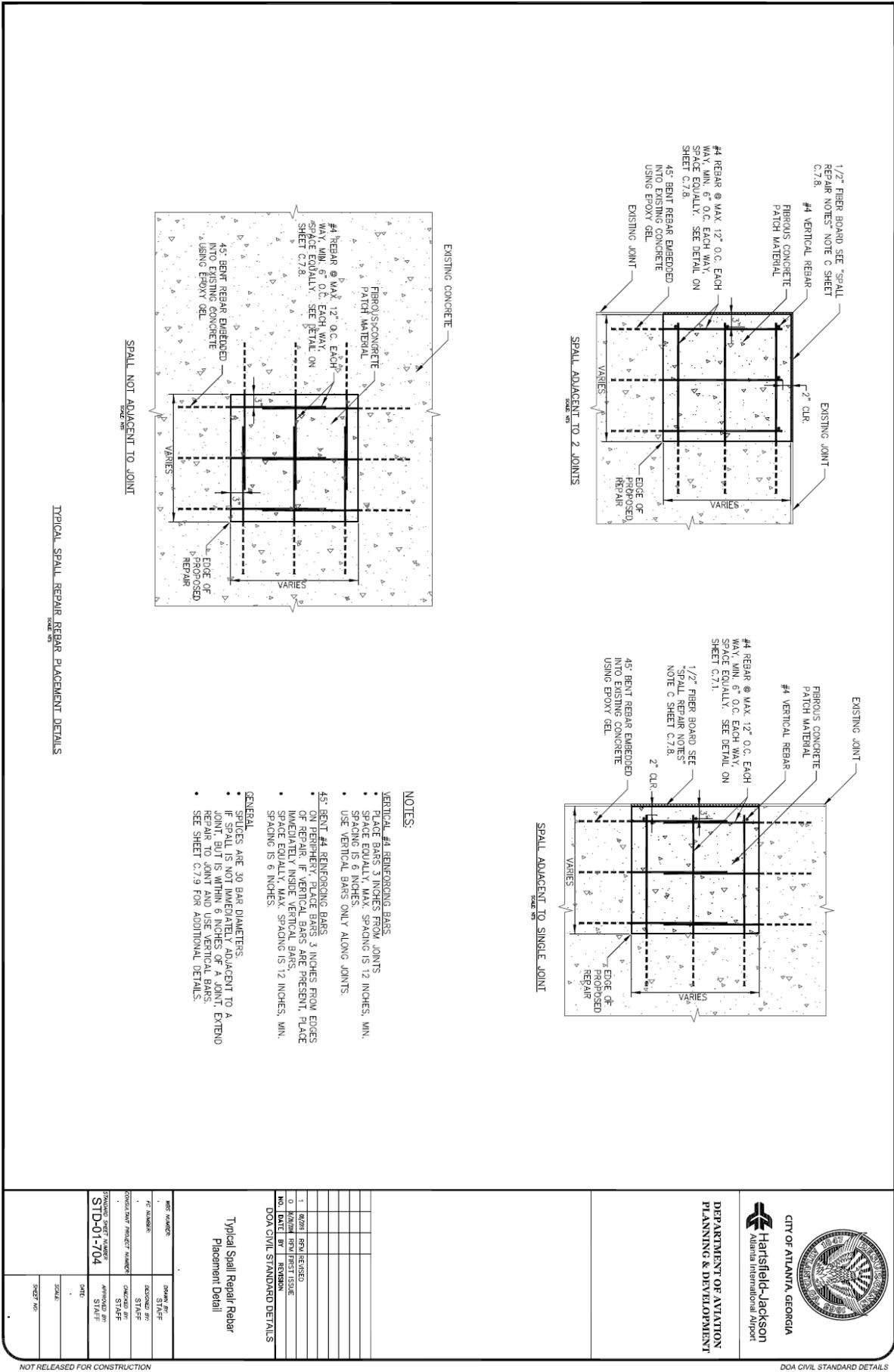
**PAVEMENT JOINT DETAILS - Replacement Projects-2**

**DOA CIVIL STANDARD DETAILS**

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2			ISSUE FOR REVIEW
3			ISSUE FOR REVIEW
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10			ISSUE FOR REVIEW











**ROADWAY LANE LINE DETAIL**  
NLS

ROADWAY LANE LINE  
LINE: WHITE, 5" WIDE  
DASHES: 10" LONG WITH  
30" BETWEEN DASHES

**PAVEMENT ARROW DIMENSIONS**  
NLS

**PAVEMENT MARKING, WORD, TYPE '2'**  
NLS

10' - 12' TYPICAL  
WHITE STOP BAR (SEE DETAIL STD-01-800)  
PAINT LETTERS  
WHITE REFLECTIVE

**PAVEMENT MARKING, ARROW, TYPE '3'**  
NLS

8'-0" x 13'-4"

**PAVEMENT MARKING, ARROW, TYPE '5'**  
NLS

7'-9" x 11'-3"

PAINT LETTERS  
WHITE REFLECTIVE

**SURFACE PAINTED SIGN LETTERING GUIDE**  
NLS

NOTES:  
1. For vertical and horizontal location of the arrow and  
lettering, see Standard Detail NLS.

**STOP FOR AIRCRAFT PAVEMENT MARKING**  
NLS

12' x 24'  
BLACK STOP BAR  
SEE DETAIL THIS SHEET FOR LETTER  
COLOR (BLACK NON-REFLECTIVE)  
BLACK, NON-REFLECTIVE  
YELLOW, REFLECTIVE

**TAXIWAY/TAXILANE CROSSING SIGN**  
NLS

2' x 2'  
RED, REFLECTIVE  
WHITE, REFLECTIVE  
LETTERING PER AIRPORT STANDARD  
SIGN (BLACK, NON-REFLECTIVE)  
YELLOW, REFLECTIVE  
WHITE, REFLECTIVE  
SIGN SHALL BE MOUNTED IN  
ACCORDANCE WITH THE MANUAL

**TAXIWAY/TAXILANE POWERUP MARKER**  
NLS

10'-0" x 10'-0"  
SEE DETAIL "SURFACE PAINTED SIGN  
LETTERING GUIDE"  
(BLACK, NON-REFLECTIVE)  
YELLOW, REFLECTIVE  
4" BLACK CENTER  
NON-REFLECTIVE  
TAXILANE CENTERLINE MARKING  
(SEE SHEET XXX DETAIL X)

**Apron NLRV Striping and Signage**

REVISION	DATE	BY	REASON
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**DOA CIVIL STANDARD DETAILS**

STANDARD: STD-01-801

DATE: 06/02/2025

BY: STAFF

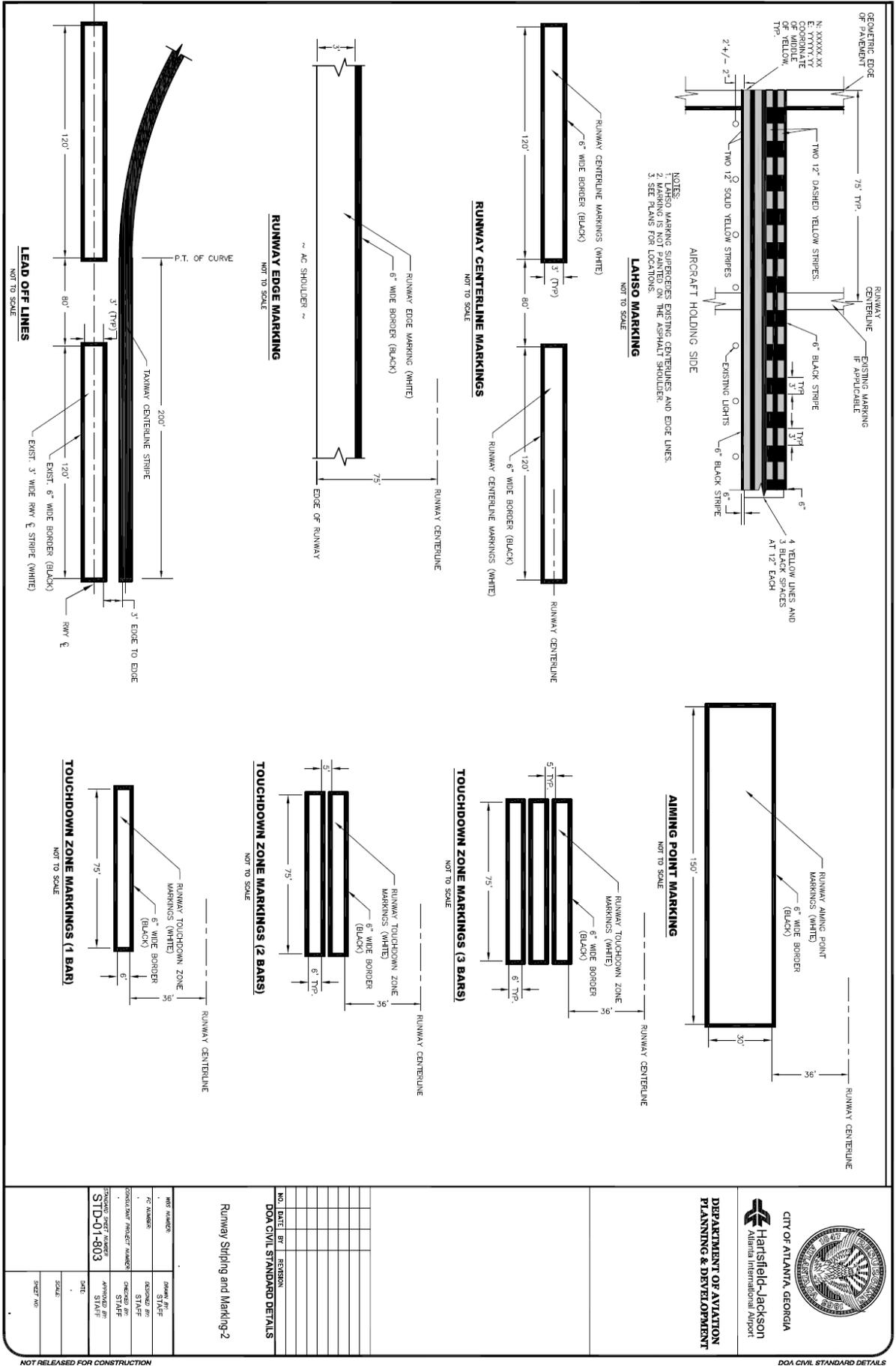
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DOA CIVIL STANDARD DETAILS

CITY OF ATLANTA, GEORGIA  
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PLANNING & DEVELOPMENT





4. Vertical engineering design standards, Volume 14d-01-803 runway striping and marking-2.dwg

NO. DATE BY REGION	DOA CIVIL STANDARD DETAILS
Runway Striping and Marking-2	
DATE	SCALE
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DESIGNED BY	STAFF
CHECKED BY	STAFF
APPROVED BY	STAFF
PROJECT NUMBER	STD-01-803
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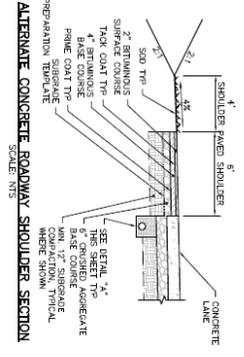
**CITY OF ATLANTA, GEORGIA**  
**Hartsfield-Jackson**  
 Atlanta International Airport  
**DEPARTMENT OF AVIATION**  
**PLANNING & DEVELOPMENT**

DOA CIVIL STANDARD DETAILS

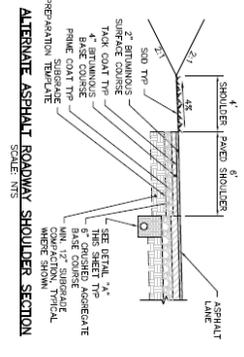




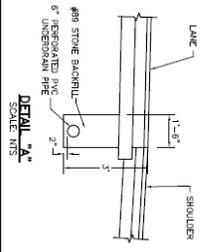
- NOTES FOR THE DESIGNER:**
1. IDENTIFY BASELINE LOCATIONS ON TYPICAL SECTIONS.
  2. GUARDRAIL FENCE AND ALL OTHER ROADSIDE ELEMENTS SHALL BE SHOWN WHERE APPROPRIATE.
  3. TYPICAL SECTIONS SHALL SHOW STATION RANGES FOR THE ENTIRE BASELINE WITH NO GAPS.
  4. TYPICAL SECTIONS SHALL BE SHOWN LOOKING IN THE DIRECTION OF THE STATIONING.
  5. CONCRETE PAYMENT LANE JOINTS SHALL FOLLOW A LENGTH TO WIDTH RATIO LESS THAN OR EQUAL TO 1.5 L TO 1 W, WHERE THAT RATIO IS NOT ACHIEVED SLABS SHALL BE REINFORCED WITH 6X12 04/04 WELDED WIRE FABRIC.
  6. SHOULDERS SHALL MATCH CONCRETE PAVEMENT LANE JOINT SPACING.
  7. CURB JOINTS SHALL MATCH CONCRETE PAVEMENT LANE JOINT SPACING.
  8. SEE STD-02-200 FOR JOINT DETAILS.
  9. SEE STD-01-200 FOR AIRSIDE ROADWAY TYPICAL SECTIONS.
  10. SEE STD-03-601 FOR TYPE 2 CURB AND GUTTER DETAILS.
  11. MINIMUM LENGTH OF DOGLEG IS 2'.



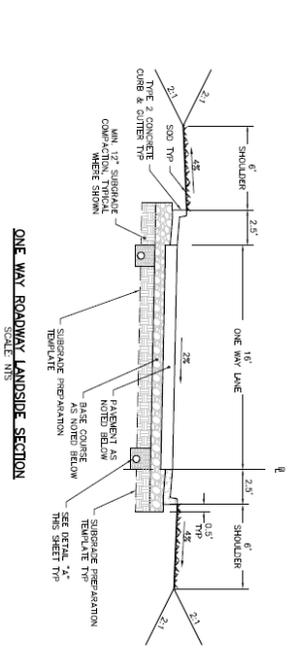
**ALTERNATE CONCRETE ROADWAY SHOULDER SECTION**  
SCALE: NTS



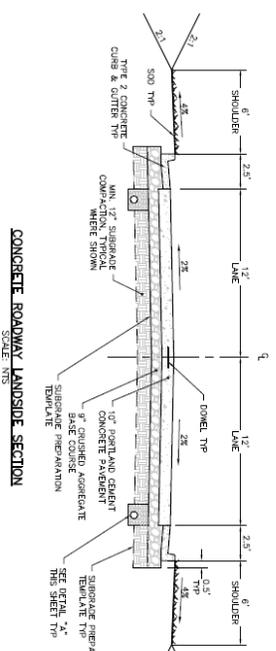
**ALTERNATE ASPHALT ROADWAY SHOULDER SECTION**  
SCALE: NTS



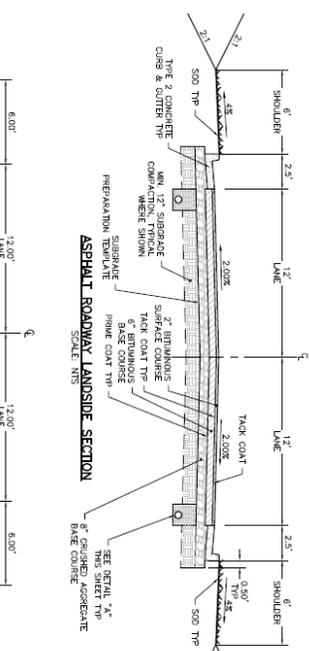
**DETAIL 'A'**  
SCALE: NTS



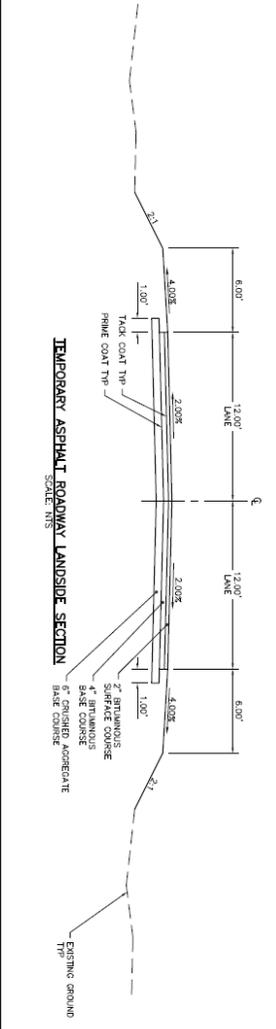
**ONE WAY ROADWAY LANDSIDE SECTION**  
SCALE: NTS



**CONCRETE ROADWAY LANDSIDE SECTION**  
SCALE: NTS



**ASPHALT ROADWAY LANDSIDE SECTION**  
SCALE: NTS



**TEMPORARY ASPHALT ROADWAY LANDSIDE SECTION**  
SCALE: NTS



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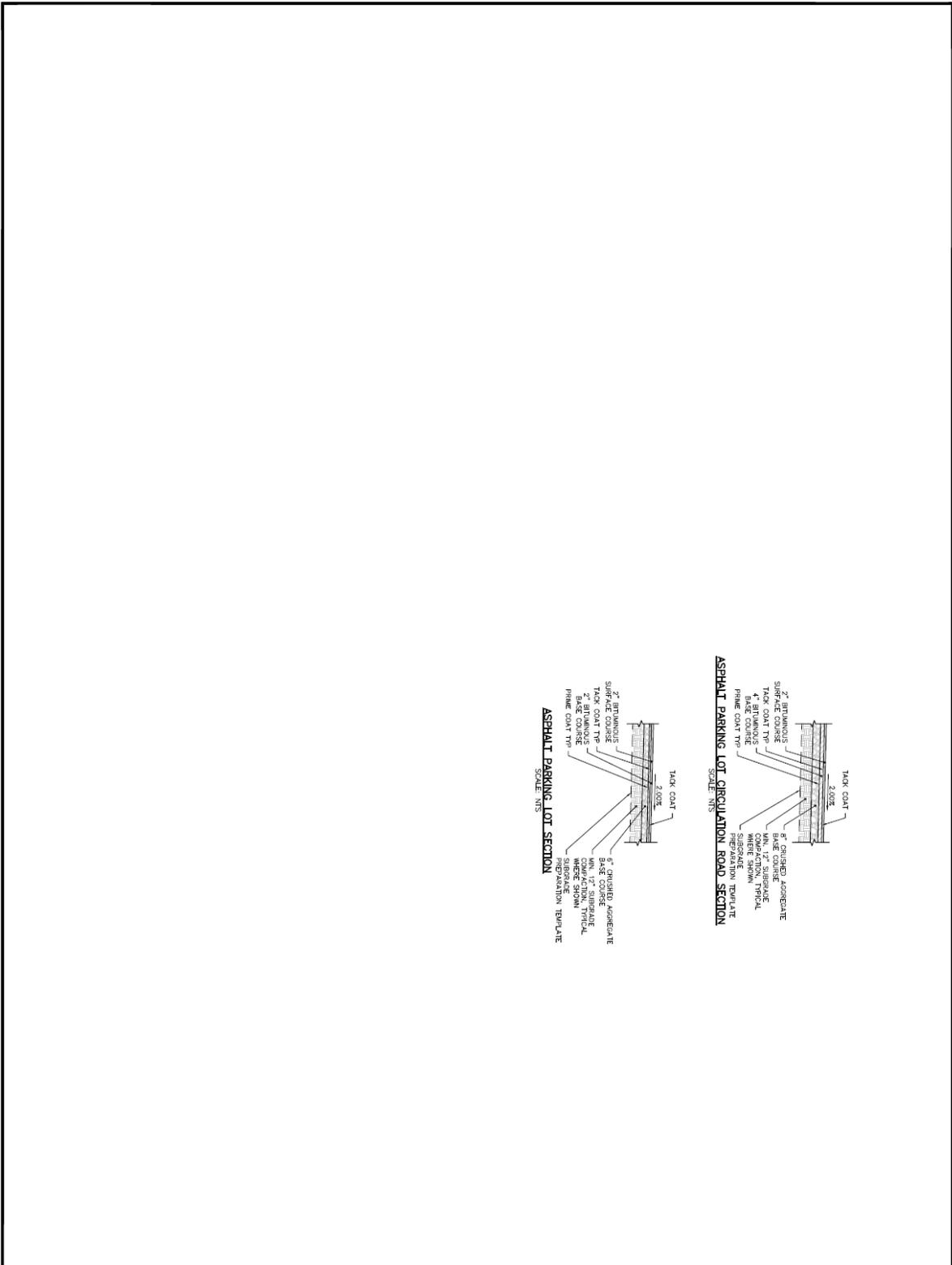
DOA CIVIL STANDARD DETAILS

Typical Pavement  
Sections - Roadways

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DOA CIVIL STANDARD DETAILS

Typical Pavement  
Sections - Roadways



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 PLANNING & DEVELOPMENT

DOA CIVIL STANDARD DETAILS

Typical Pavement  
 Sections - Parking

NO. DATE BY REVISION  
 DOA CIVIL STANDARD DETAILS

WORK NUMBER	DATE	BY	REVISION
PC NUMBER	DESIGNED BY		
CORRECT DATE PROJECT NUMBER	CHECKED BY		
STANDARD DRAW NUMBER	APPROVED BY		
STD-02-101	STAFF		
DATE			
SCALE			
SHEET NO.			

NOT RELEASED FOR CONSTRUCTION

Maximum Change in Grade (%)	Maximum Change in Grade that Does Not Require a Vertical Curve										
	Design Speed (mph)										
Maximum Change in Grade (%)	20	25	30	35	40	45	50	55	60	65	70
	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2

**NOTE:**  
 1. VERTICAL CURVES BY CHANGES IN GRADE ARE ALWAYS PREFERRED. THE DESIGN SPEED OF HIGHWAYS AND STREETS, HOWEVER, IN A VERTICAL CURVE IS NOT TO BE LESS THAN THE DESIGN SPEED. GRADE CHANGES THAT EXCEED THE DESIGN SPEED DO NOT REQUIRE A VERTICAL CURVE.

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CITY OF ATLANTA, GEORGIA  
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DOA CIVIL STANDARD DETAILS

**NOTES:**

- LONGITUDINAL AND TRANSVERSE JOINTS SHALL BE SAWN AS INDICATED.
- ALL TRANSVERSE JOINTS SHALL BE NORMAL TO PAVEMENT EDGE.
- FOR ALL JOINTS THE BACKER ROD MATERIAL SHALL BE PLACED IN THE JOINT AND SUFFICIENTLY COMPRESSED TO PREVENT WEIGHT DURING THE JOINT SEALANT OPERATION.
- THE WIDTH OF THE JOINTS SHALL BE CONNECTED FOR BEST.
- JOINT CONSTRUCTION SHALL NOT BE DONE UNTIL THE JOINTS ARE CLEAN AND DRY (SEE NOTE 8).
- JOINT SEALANT SHALL BE APPLIED TO THE JOINT SURFACE (FOR ALL NEW CONCRETE PAVEMENT SLABS).
- WORKING WELDED WIRE FABRIC (WELDED WIRE FABRIC) SHALL BE USED TO REINFORCE JOINTS (SEE NOTE 8).
- AS NOTED ON PLANS, JOINTS SHALL BE PLACED ON CENTERLINE OR CENTERLINE, 2'-0" ON CENTER, OR CENTERLINE, 2'-0" ON CENTER.
- ALL STEEL TO BE DELIVERED IN FLAT SHEETS, ROLL STOCK IS NOT ACCEPTABLE.
- PLACE 4" BELOW THE TOP OF THE CONCRETE SURFACE.

**NOTES FOR DOWEL AND THE BAR HOLE DRILLING AND INSTALLATION**

- DRILLING AND INSTALLATION METHOD SHALL BE COMBINE OF MANDREL DRILL HOLE AND SURFACE DRILLING. (SEE NOTE 1).
- AT THE END OF THE DOWEL OR THE BAR EXCEPT WHERE SPECIFIED OTHERWISE, DRILL HOLES SHALL BE ACCURATELY LOCATED SUCH THAT THE HOLE QUANTER TO BE APPROXIMATELY 1/8" CLEAR OF BAR ALL AROUND.
- AFTER THE DRILLING IS COMPLETE AND BEFORE TOLERATION OF THE DOWEL OR THE BAR, THE HOLES SHALL BE THOROUGHLY CLEANED TO REMOVE ALL DUST, CONCRETE CHIPS, AND FOREIGN MATERIALS TO PREVENT.
- ENJOY DEL SHALL BE APPLIED TO THE DOWEL AND BAR HOLE BY A MECHANICAL WIPER/BLADE DEVICE SO THAT A SLIGHT AMOUNT OF DEL WILL BE REMOVED OUT WHEN THE DOWEL OR THE BAR IS PLACED IN THE HOLE. IT WILL BE NECESSARY TO TIGHTEN THE BAR BACK AND FORW SEVERAL TIMES TO ELIMINATE THE AIR ENTRAPPED IN THE HOLE. SHALL WELDES MAY BE CORRECT ALIGNMENT UNTIL THE DEL HARDENS.
- ENJOY SHALL MEET THE DESIGN REQUIREMENT OF THE SPECIFICATION. THE WELDED WIRE FABRIC SECTION BAR FOR TYPE III ENJOY DEL.

**DEPARTMENT OF AVIATION  
PLANNING & DEVELOPMENT**

CITY OF ATLANTA GEORGIA

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DATE: \_\_\_\_\_

DESIGNED BY: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_

STANDARD: STD-02-200

REVISIONS:

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3	10/20	REVISED

**JOINTS - NLVR or Landside Roads**

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CHECKED BY: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_

STANDARD: STD-02-200

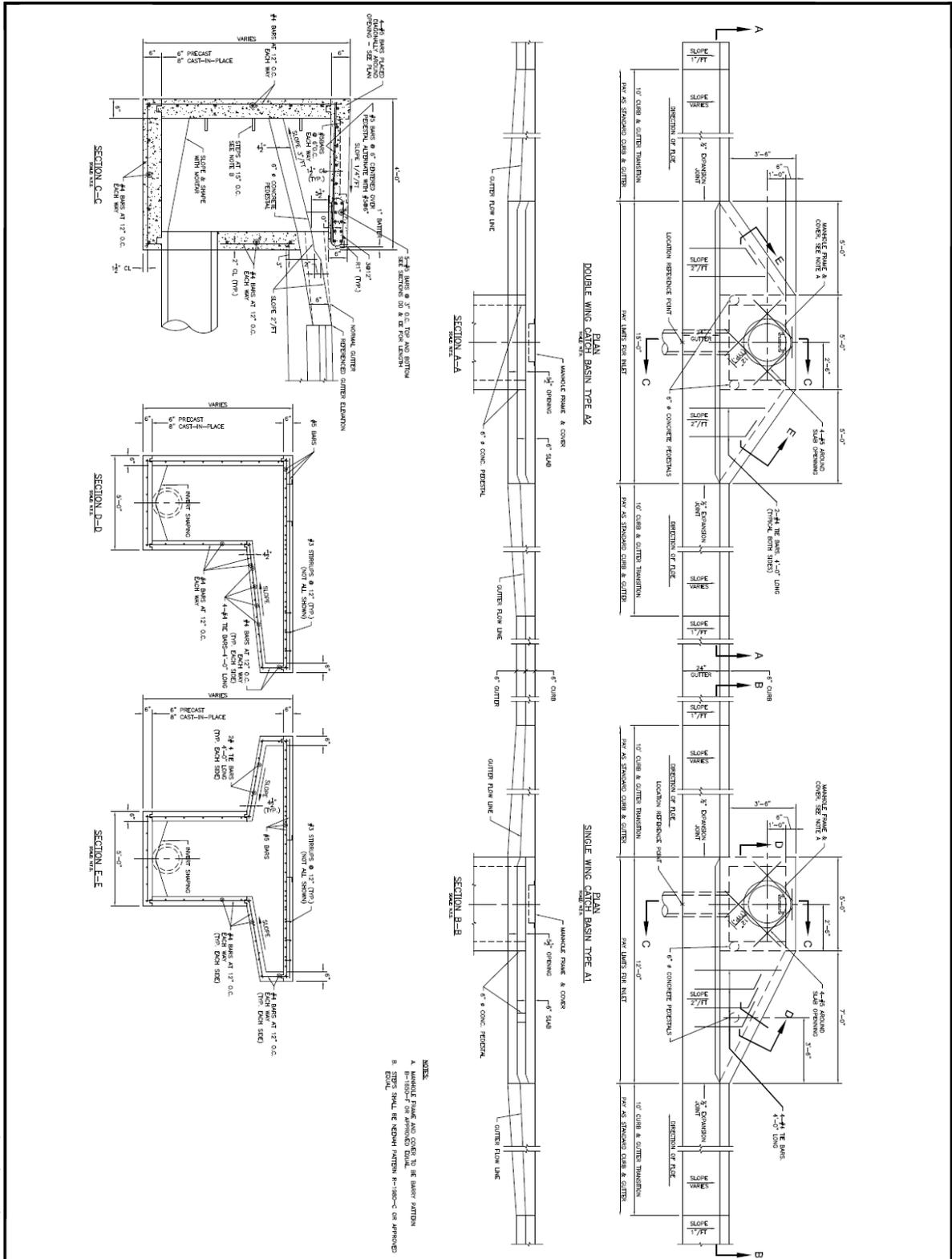
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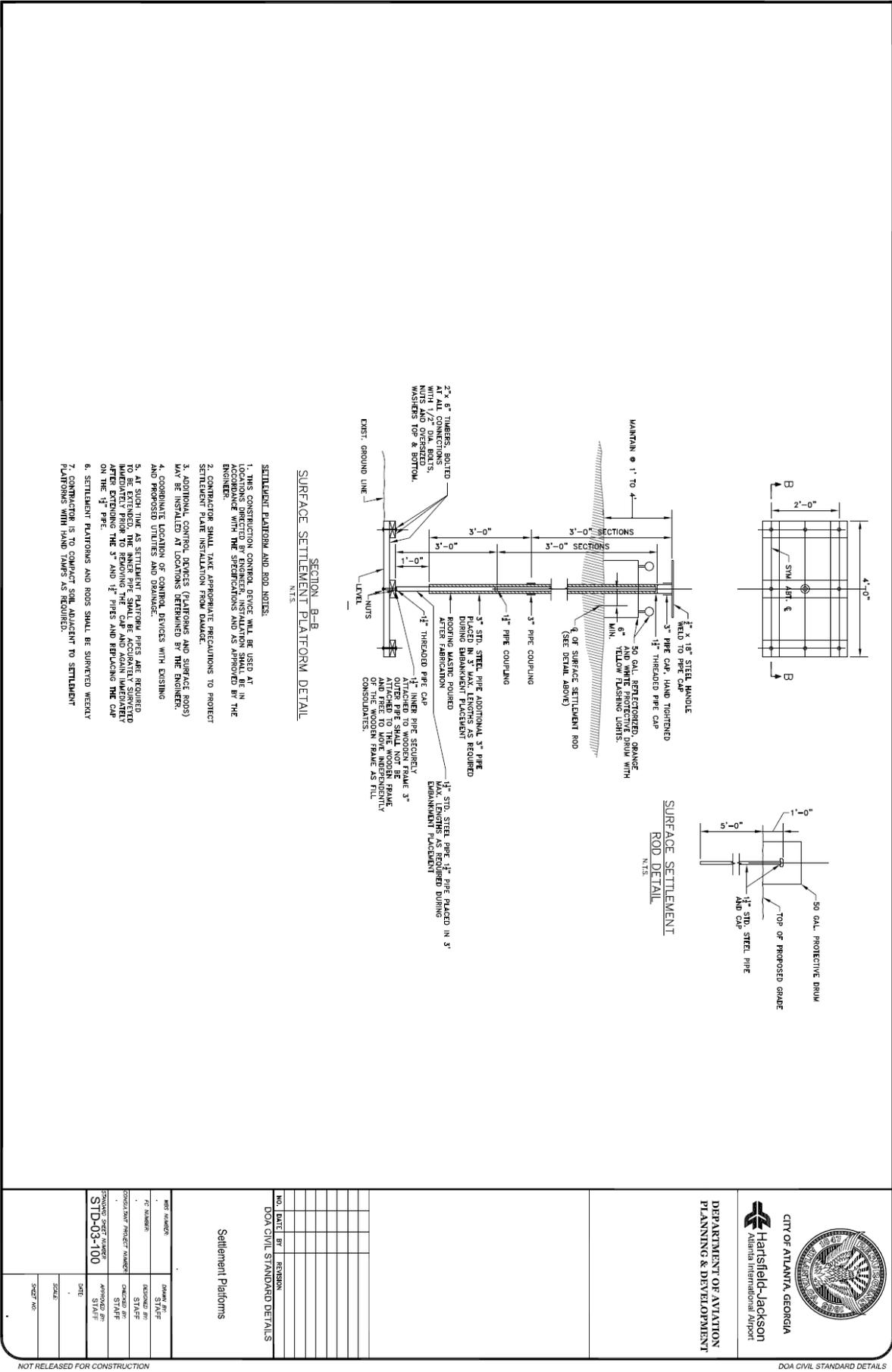




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<p><b>CITY OF ATLANTA, GEORGIA</b>          Hartsfield-Jackson          Atlanta International Airport</p>	<p><b>DEPARTMENT OF AVIATION          PLANNING &amp; DEVELOPMENT</b></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> <p><b>REVISIONS</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>NO.</th> <th>DATE</th> <th>BY</th> <th>REVISION</th> </tr> <tr> <td>1</td> <td></td> <td></td> <td>REVISED</td> </tr> <tr> <td>0</td> <td></td> <td></td> <td>ORIGINAL REVISED ISSUE</td> </tr> </table> <p><b>DOCA CIVIL STANDARD DETAILS</b></p> </td> <td style="width: 50%; text-align: center;"> <p><b>Landside Drainage-1</b></p> </td> </tr> <tr> <td colspan="2"> <p><b>PROJECT INFORMATION</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> <p>PROJECT NO.: <b>STD-02-500</b></p> <p>SCALE: <b>AS SHOWN</b></p> <p>SHEET NO.: <b>1</b></p> </td> <td style="width: 50%;"> <p>DESIGNED BY: <b>AVIATION STAFF</b></p> <p>CHECKED BY: <b>AVIATION STAFF</b></p> <p>DATE: <b>06/02/2025</b></p> </td> </tr> </table> </td> </tr> </table>	<p><b>REVISIONS</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>NO.</th> <th>DATE</th> <th>BY</th> <th>REVISION</th> </tr> <tr> <td>1</td> <td></td> <td></td> <td>REVISED</td> </tr> <tr> <td>0</td> <td></td> <td></td> <td>ORIGINAL REVISED ISSUE</td> </tr> </table> <p><b>DOCA CIVIL STANDARD DETAILS</b></p>	NO.	DATE	BY	REVISION	1			REVISED	0			ORIGINAL REVISED ISSUE	<p><b>Landside Drainage-1</b></p>	<p><b>PROJECT INFORMATION</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> <p>PROJECT NO.: <b>STD-02-500</b></p> <p>SCALE: <b>AS SHOWN</b></p> <p>SHEET NO.: <b>1</b></p> </td> <td style="width: 50%;"> <p>DESIGNED BY: <b>AVIATION STAFF</b></p> <p>CHECKED BY: <b>AVIATION STAFF</b></p> <p>DATE: <b>06/02/2025</b></p> </td> </tr> </table>		<p>PROJECT NO.: <b>STD-02-500</b></p> <p>SCALE: <b>AS SHOWN</b></p> <p>SHEET NO.: <b>1</b></p>	<p>DESIGNED BY: <b>AVIATION STAFF</b></p> <p>CHECKED BY: <b>AVIATION STAFF</b></p> <p>DATE: <b>06/02/2025</b></p>
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- SETTLEMENT PLATFORM AND ROD NOTES:**
1. THIS CONSTRUCTION CONTROL DEVICE WILL BE USED AT LOCATIONS DIRECTED BY ENGINEER. INSTALLATION SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND AS APPROVED BY THE ENGINEER.
  2. CONTRACTOR SHALL TAKE APPROPRIATE PRECAUTIONS TO PROTECT SETTLEMENT PLATE INSTALLATION FROM DAMAGE.
  3. ADDITIONAL CONTROL DEVICES (PLATFORMS AND SURFACE RODS) MAY BE INSTALLED AT LOCATIONS DETERMINED BY THE ENGINEER.
  4. COORDINATE LOCATION OF CONTROL DEVICES WITH EXISTING AND PROPOSED UTILITIES AND DRAINAGE.
  5. AT SUCH TIME AS SETTLEMENT PLATFORM PIPES ARE REQUIRED TO BE EXTENDED, THE INNER PIPE SHALL BE ACQUAINTED SURVEYED AND SET FROM THE OLD AND AGAIN IMMEDIATELY AFTER FINISHING THE 3" AND 1/2" PIPES AND RE-OPENING THE CAP ON THE 1/2" PIPE.
  6. SETTLEMENT PLATFORMS AND RODS SHALL BE SURVEYED WEEKLY.
  7. CONTRACTOR IS TO COMPACT SOIL ADJACENT TO SETTLEMENT PLATFORMS WITH HAND TAMPS AS REQUIRED.

**NO. DATE BY REVISION**


**DOA CIVIL STANDARD DETAILS**

**Settlement Platforms**

WORK NUMBER	
DATE	
SCALE	
SHEET NO.	



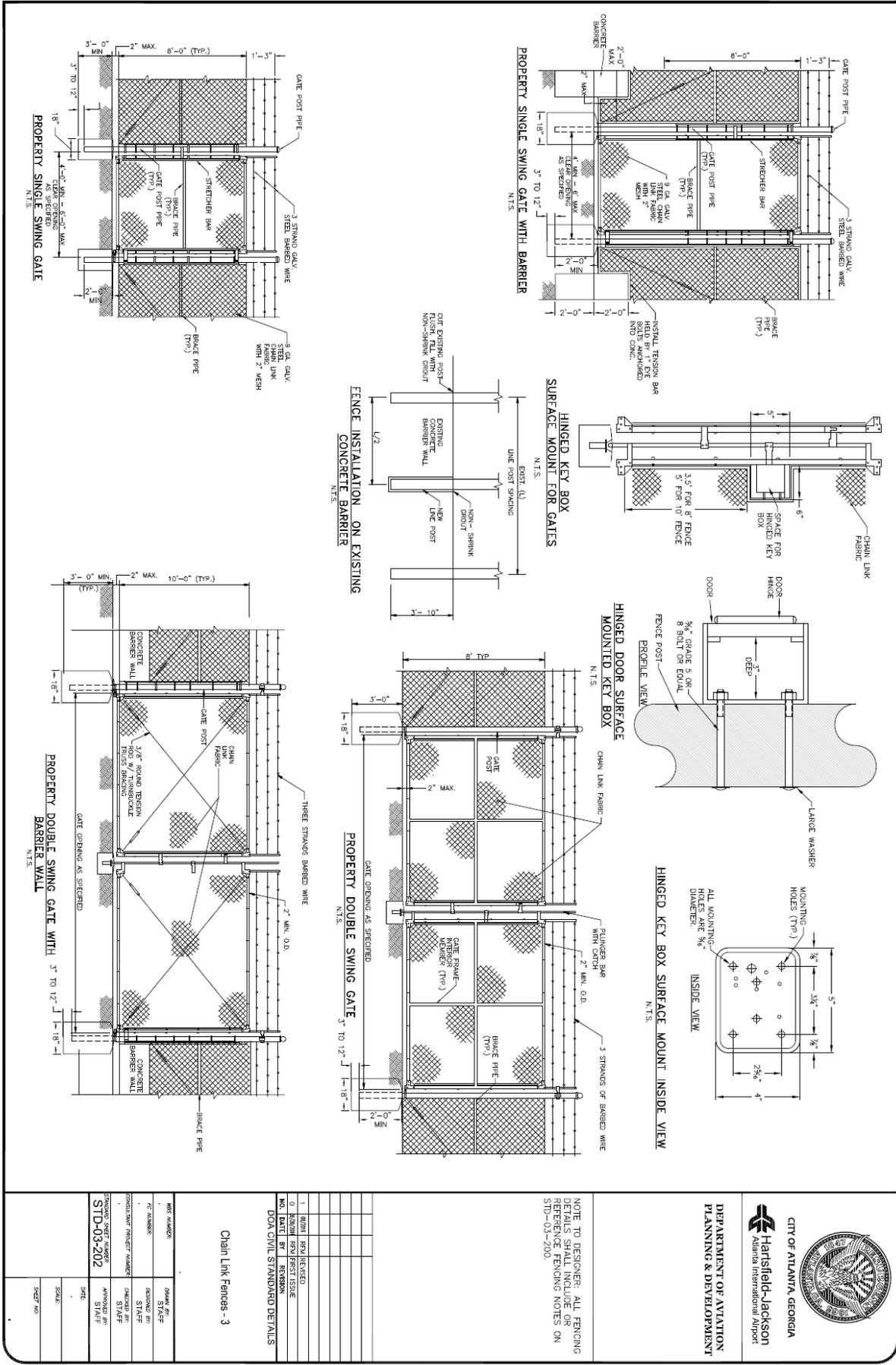
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**Hartsfield-Jackson**  
 Atlanta International Airport

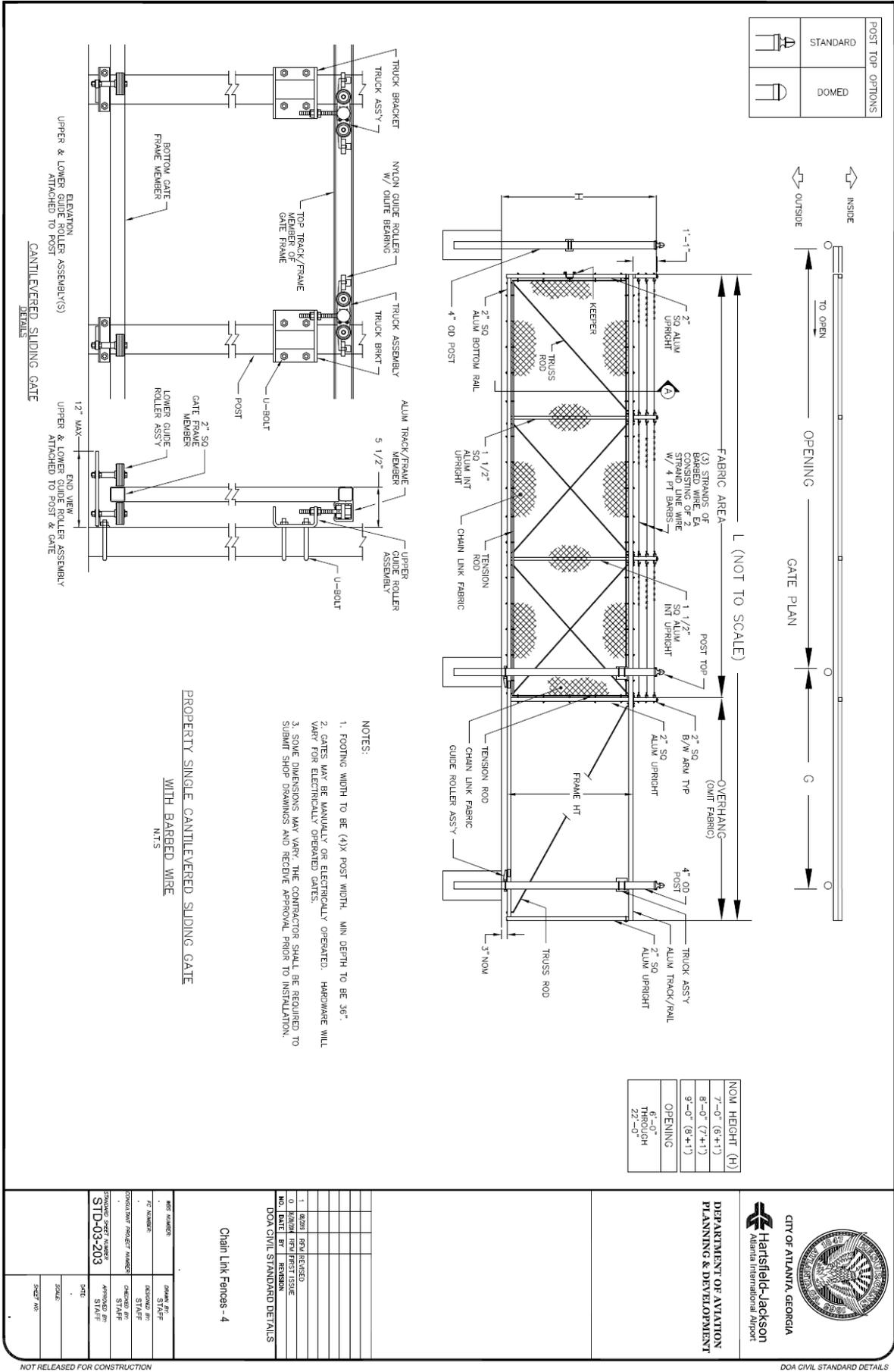
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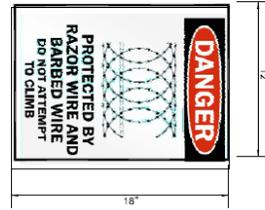
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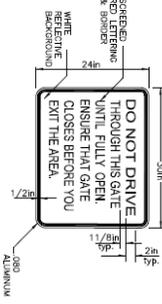




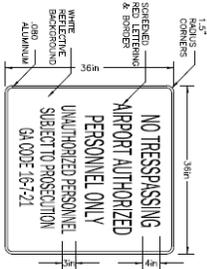




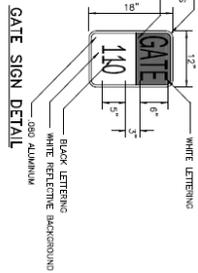
**SIDA DANGER SIGN DETAIL**  
 SIGN TO BE PLACED APPROX. 10' FROM RAZOR WIRE AND BARBED WIRE WHICH IS PLACED EVERY 200 FEET



**AUTOMATIC SIDA GATE WARNING SIGN DETAIL**



**SIDA FENCE WARNING SIGN DETAIL**  
 NOTE: TO BE PLACED EVERY 200 FEET ON SIDA ADJACENT FENCING.



**GATE SIGN DETAIL**



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Chain Link Fence - Signage

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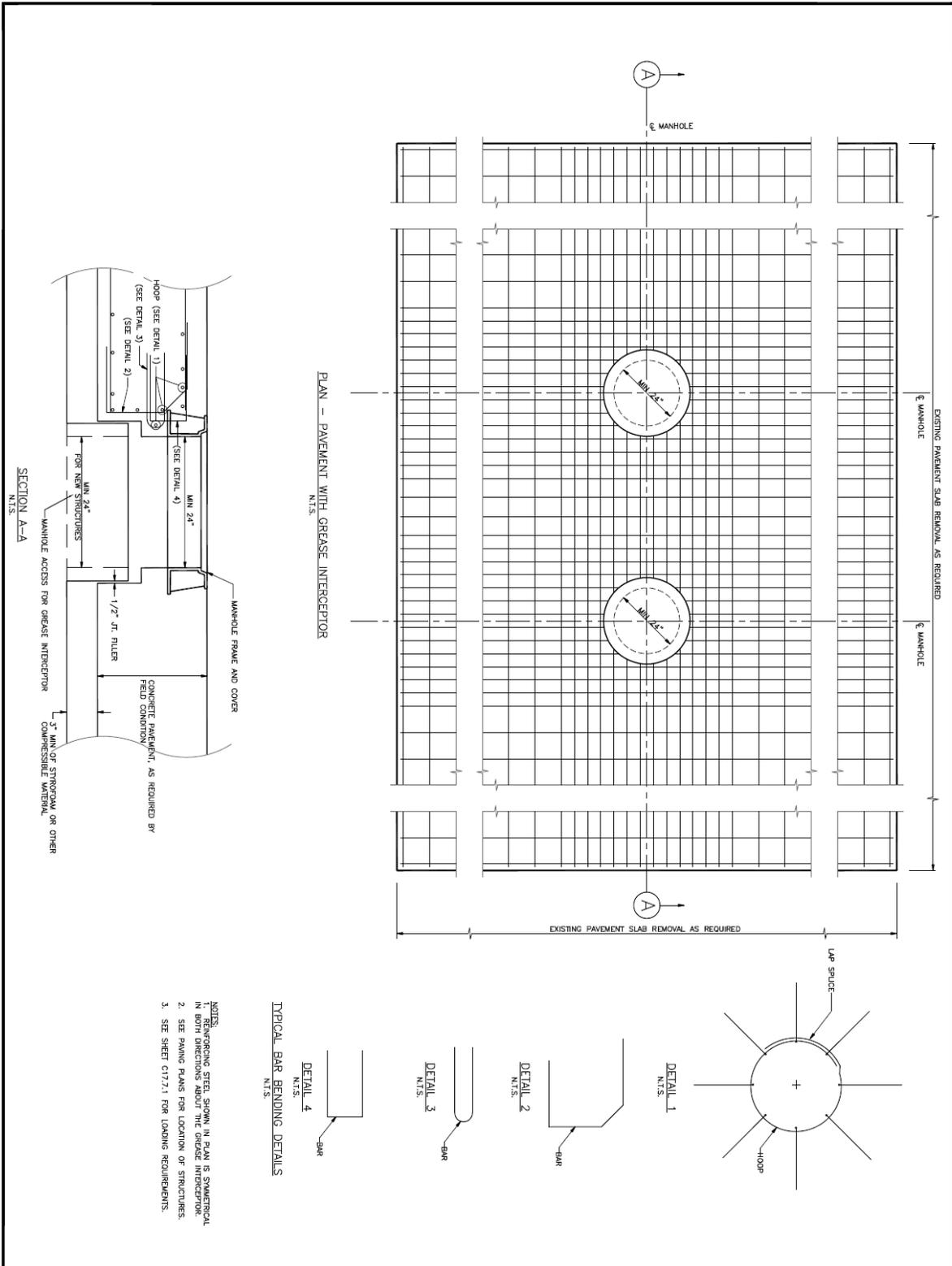












**UTILITY SLAB DETAIL FOR INTERCEPTOR**  
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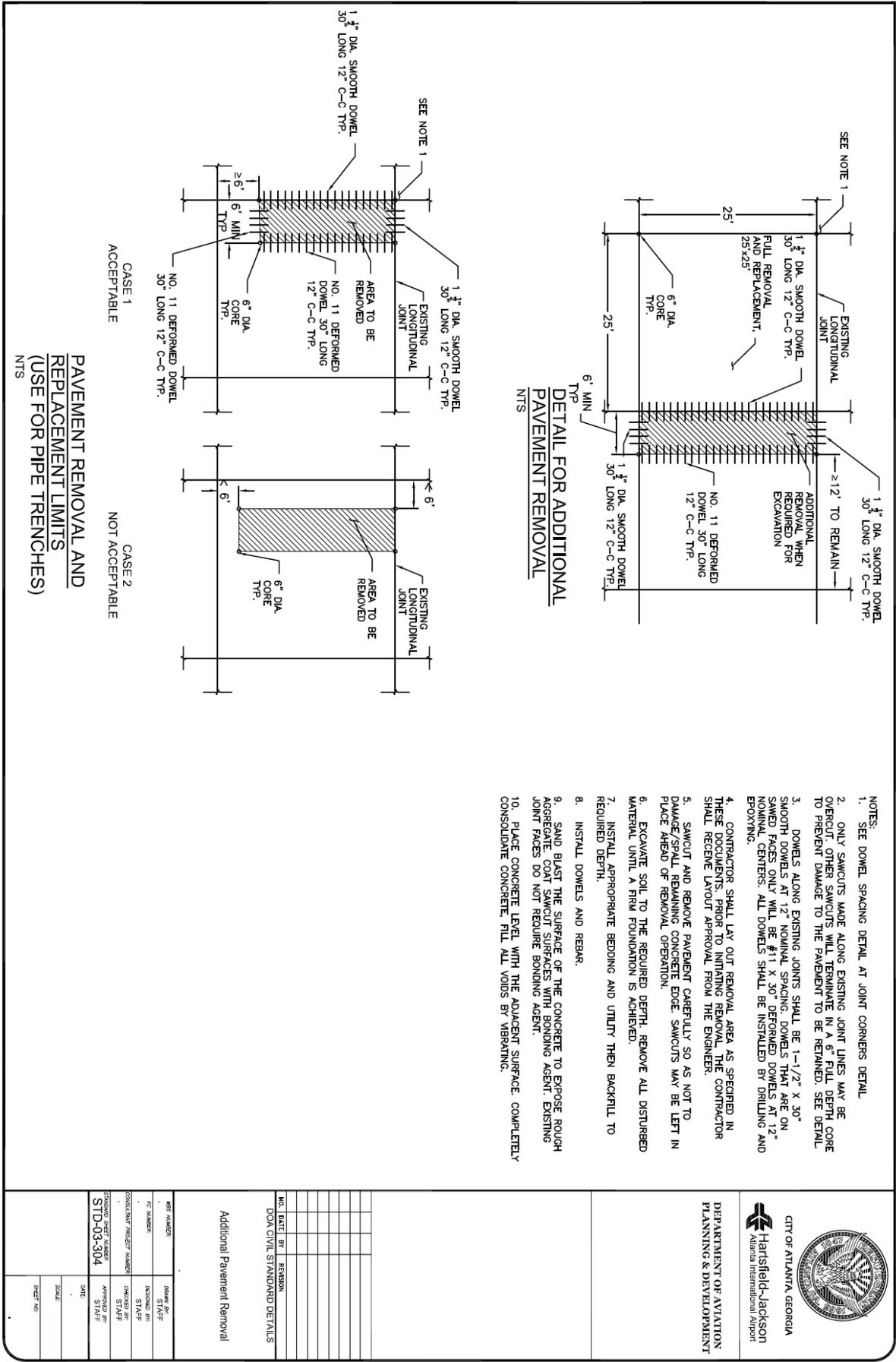
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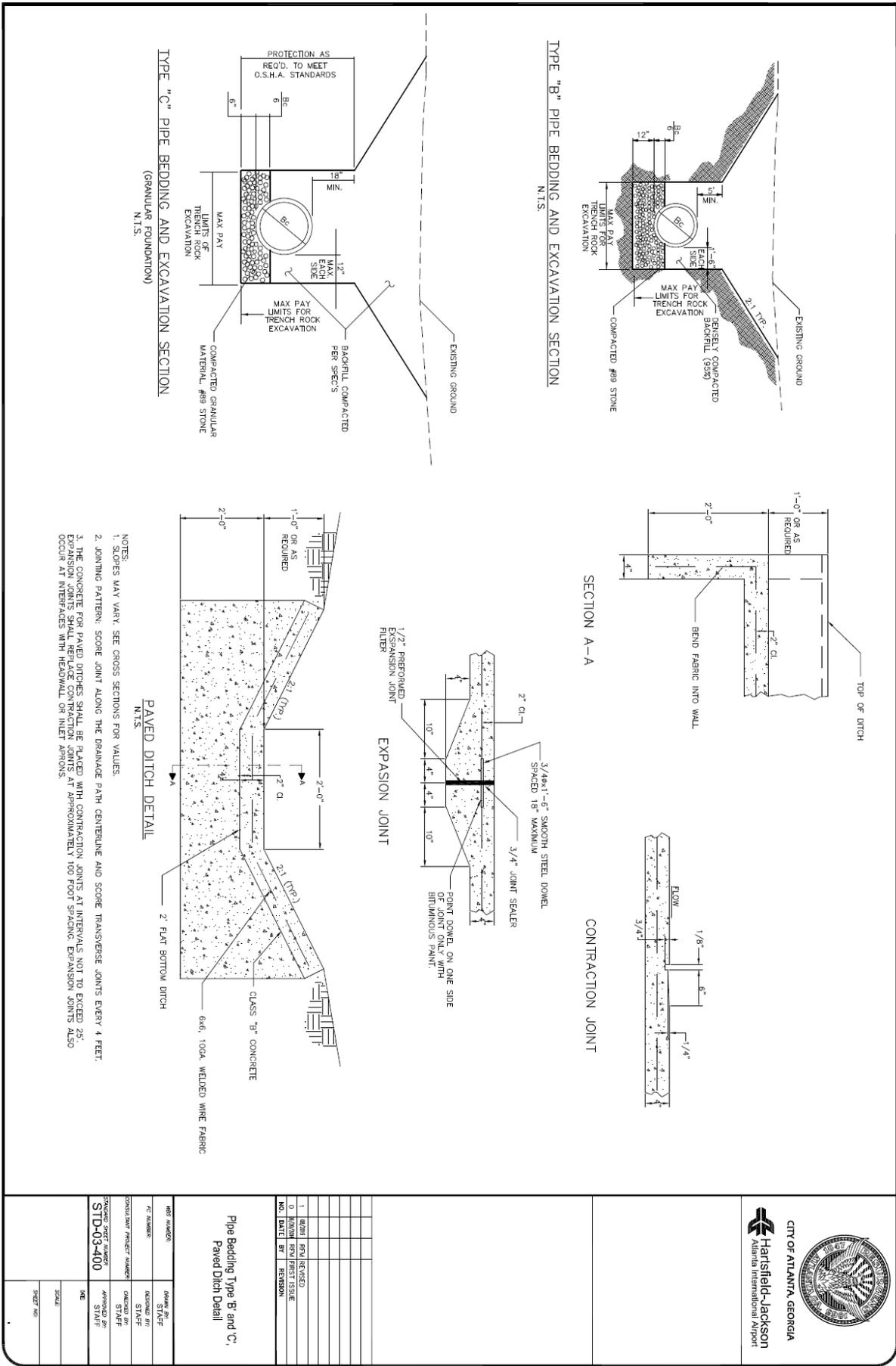


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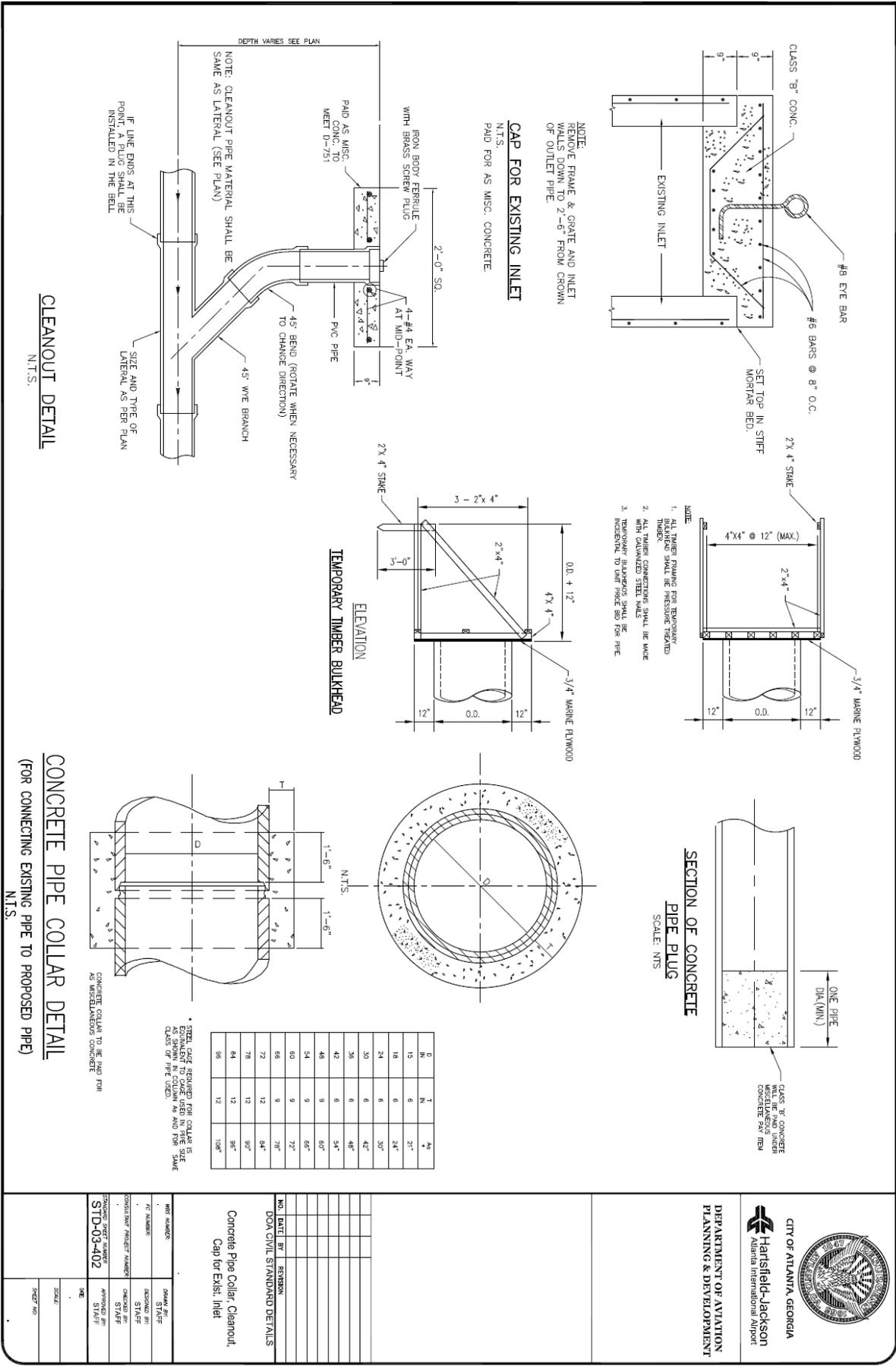
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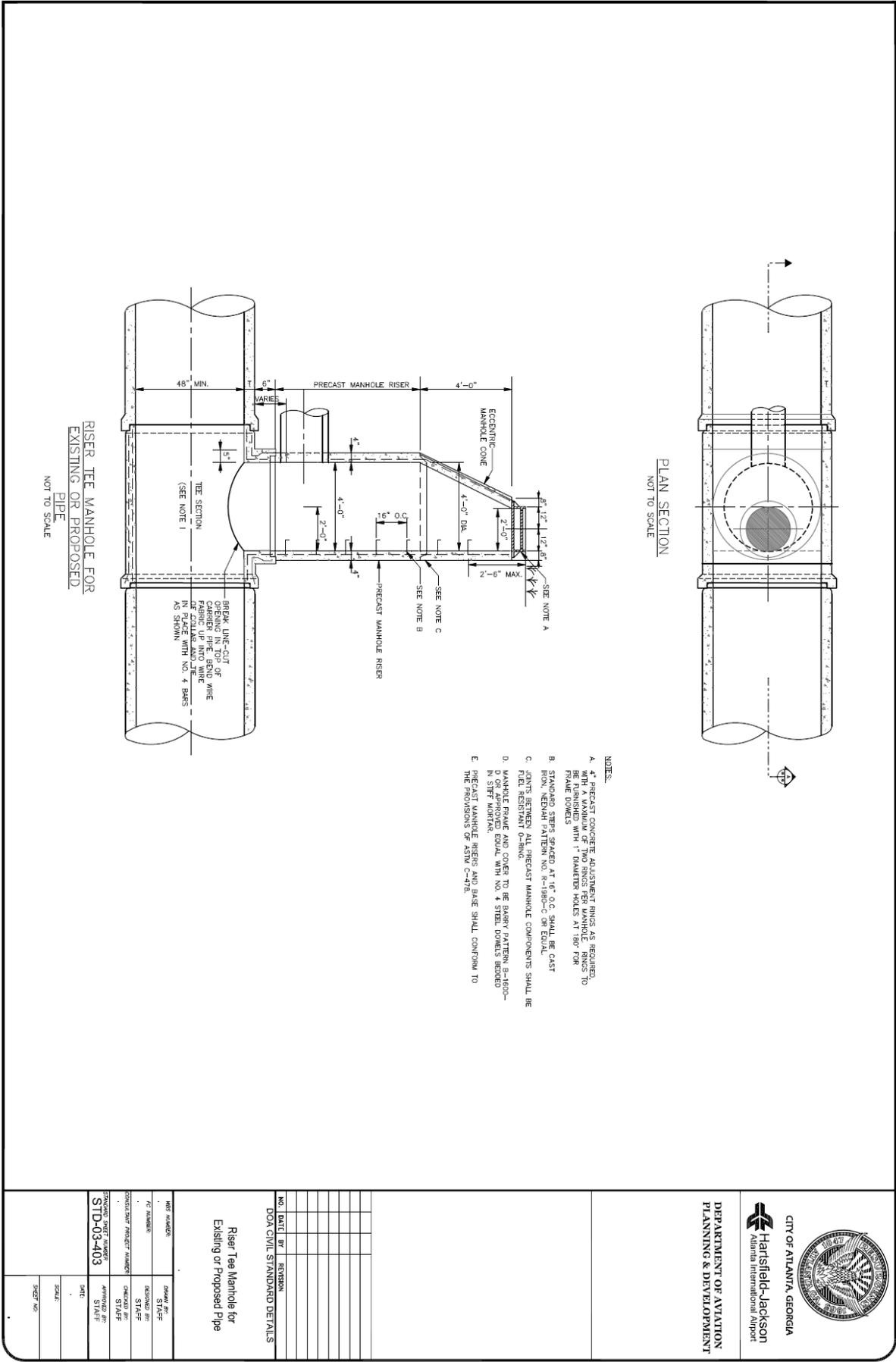
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DATE	
SCALE	
DRAWN BY	STAFF
CHECKED BY	STAFF
APPROVED BY	STAFF
PROJECT NO.	











PLAN SECTION  
NOT TO SCALE

- NOTES:
- A. 4" PRECAST CONCRETE ADJUSTMENT RINGS AS REQUIRED.
  - B. STANDARD STEPS SPACED AT 16" O.C. SHALL BE CAST IRON. NEWMAT PATTERN NO. R-1980-C OR EQUAL.
  - C. JOINTS BETWEEN ALL PRECAST MANHOLE COMPONENTS SHALL BE FUEL RESISTANT O-RING.
  - D. MANHOLE FRAME AND COVER TO BE BARRY PATTERN B-1600-D OR APPROVED EQUAL WITH NO. 4 STEEL DOMES BEDDED IN SIFT MORTAR.
  - E. PRECAST MANHOLE RINGS AND BASE SHALL CONFORM TO THE PROVISIONS OF ASTM C-973A.

RISER TEE MANHOLE FOR  
 EXISTING OR PROPOSED  
 PIPE  
 NOT TO SCALE

4:\Users\jvanderweide\Drawings\Standard\Details\Std-03-403.rvt for manhole for existing or proposed pipe.dwg



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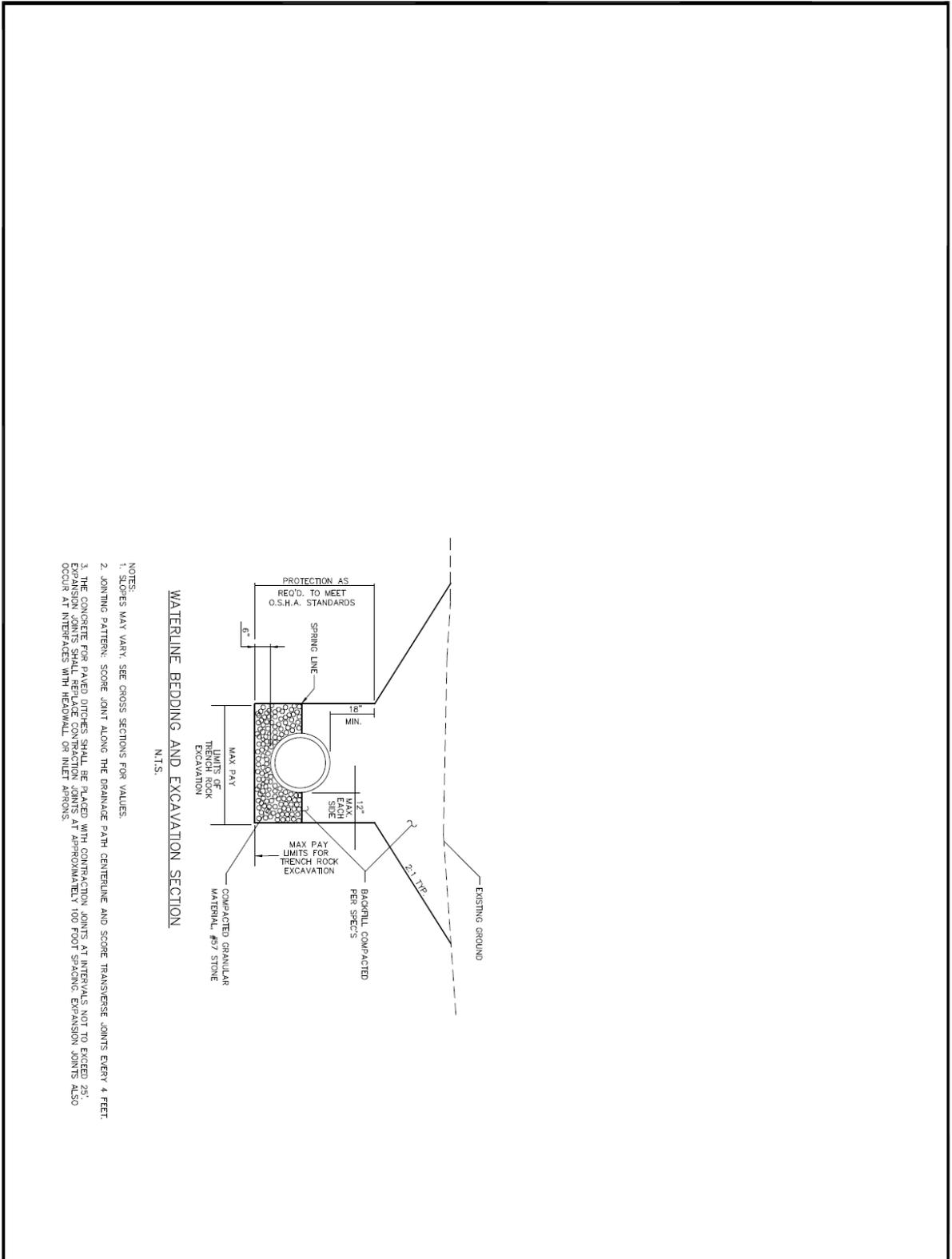
**Riser Tee Manhole for Existing or Proposed Pipe**

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APPROVED BY	STAFF
DATE	
SCALE	
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- NOTES:  
 1. SIZES MAY VARY. SEE CROSS SECTIONS FOR VALUES.  
 2. JOINTING PATTERN: SCORE JOINT ALONG THE DRAINAGE PATH CENTERLINE AND SCORE TRANSVERSE JOINTS EVERY 4 FEET.  
 3. THE CONCRETE FOR PAVED UTCHES SHALL BE PLACED WITH CONTRACTION JOINTS AT INTERVALS NOT TO EXCEED 25'. EXPANSION JOINTS SHALL REPLACE CONTRACTION JOINTS AT APPROXIMATELY 100 FOOT SPACING. EXPANSION JOINTS ALSO OCCUR AT INTERFACES WITH HEADWALL OR INLET APRONS.

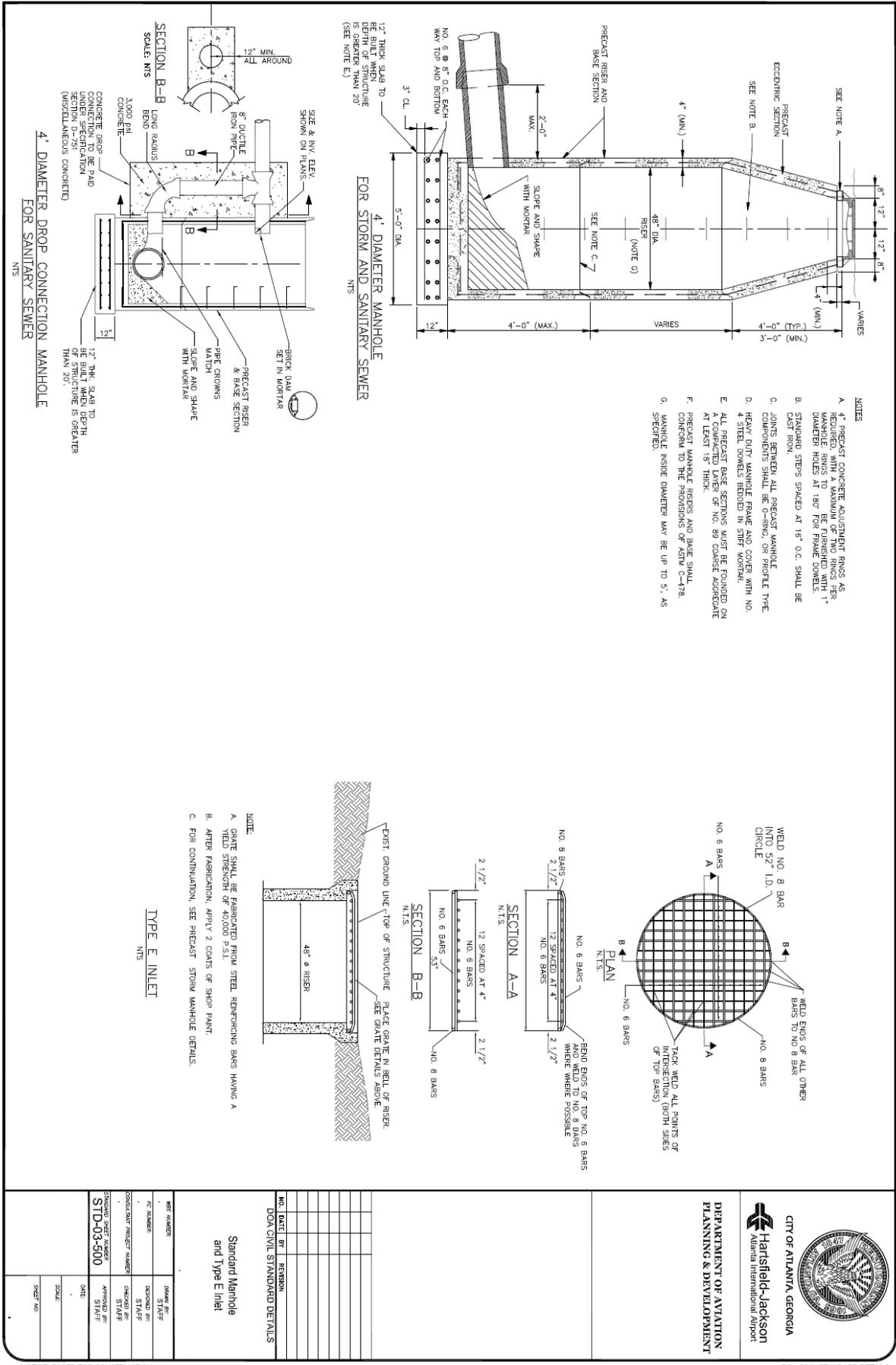
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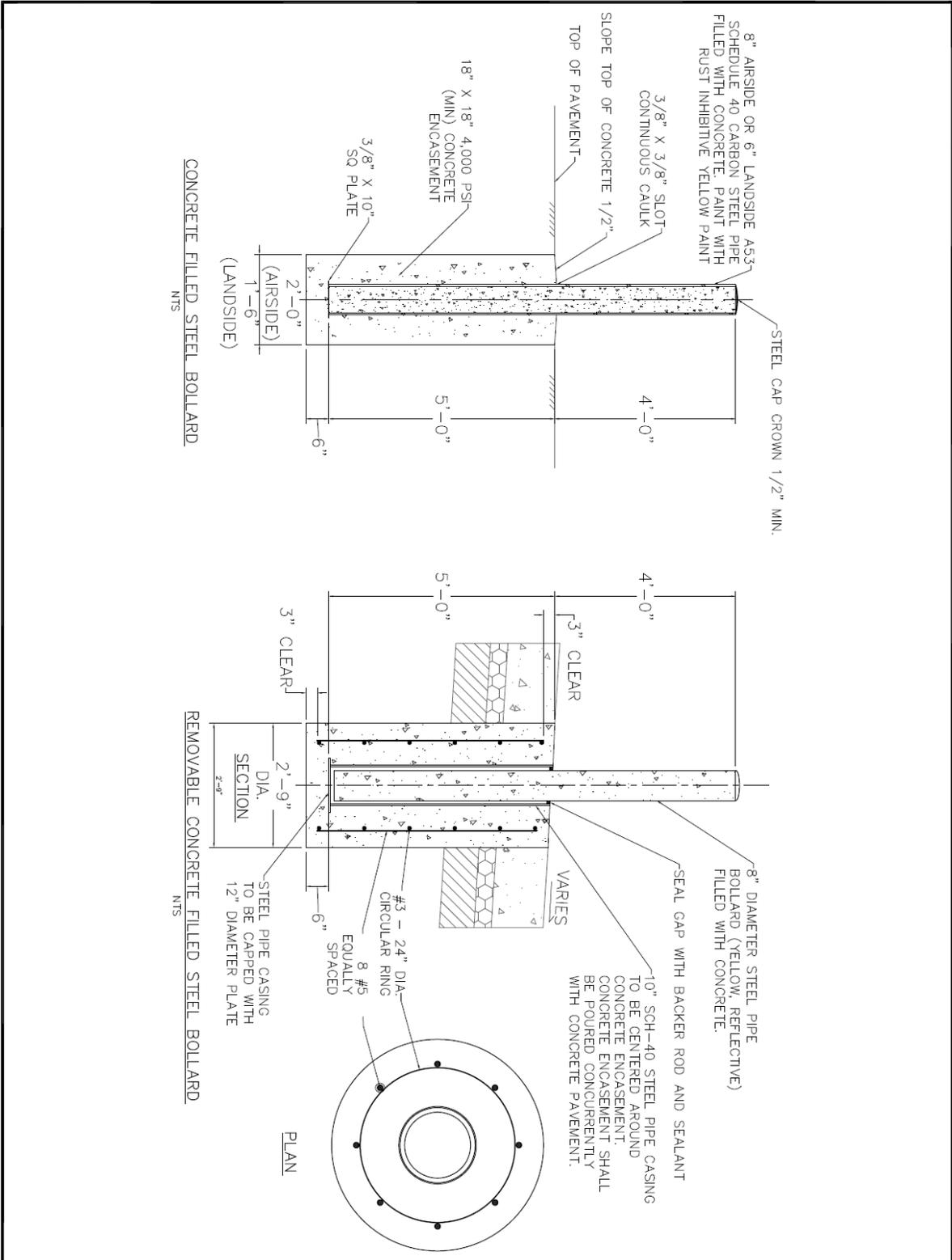
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 CITY OF ATLANTA, GEORGIA <b>Hartsfield-Jackson</b> Atlanta International Airport	<b>DEPARTMENT OF AVIATION</b> PLANNING & DEVELOPMENT	Waterline Bedding and Excavation Section	NOT RELEASED FOR CONSTRUCTION																	
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