Hartsfield-Jackson Atlanta International Airport

City of Atlanta
Department of Aviation
Office of Infrastructure Planning & Development

Tenant
New Construction and Modifications

Design Standards

Project Submittal &
Review Standards

Table of Contents

1.0 PURPOSE

A. The purpose of these standards is to provide airport Tenants and their Designers of Record with procedures for submitting a project to the Department of Aviation's Planning & Development Bureau (P&D) for technical review and acceptance. All new construction and modifications to any airport's Tenant space at Hartsfield-Jackson Atlanta International Airport (ATL) shall follow these standards.

2.0 SCOPE

A. These standards apply to all airport Tenants and their Designers of Record, contractors and subcontractors.

3.0 RESPONSIBILITIES

A. Tenants

1. Tenants/Designers of Record shall be responsible for submitting all project submittals to P&D per P&D's Design Review Process for Tenant Projects, Tenant Flow Chart (Appendix A).
2. Tenants/Designers of Record shall be responsible for complying with the latest ATL P&D's Tenant New Construction, Design Modifications and Construction Standards located at: (https://atlstandards.com)
3. Tenants/Designers of Record shall be responsible for submitting to P&D all revisions and/or modifications to P&D for review and acceptance.
4. Tenants/Contractors/Subcontractors shall be responsible for obtaining all required building permits from appropriate agencies before the start of any construction work. The City of Atlanta Office of Buildings shall not accept any submittals for permitting without the P&D/AFD stamped/accepted seal.

B. DOA Planning & Development Bureau (P&D)

1. P&D shall be responsible for the Architectural/Engineering technical review of all project submittals submitted to P&D by Tenants and/or their Designers of Record. Code reviews, Fire/Life Safety code and Grease Interceptor requirement reviews are the responsibility of the City of Atlanta Office of Buildings (OOB), Atlanta Fire Department (AFD) and Department of Watershed Management (DWM) respectively.
2. P&D shall be responsible for ensuring that all project submittals comply with the latest ATL P&D's Tenant New Construction, Design Modifications and Construction Standards located at: (https://atlstandards.com)
3. P&D shall be responsible for transmitting the technical review comments to Tenants and their Designers of Record. (Appendix A)
4. P&D shall be responsible for issuing the final P&D/AFD electronically stamped accepted project submittals to Tenants and their Designers of Record.

4.0 PROCEDURE

A. Project Submittals

1. Delivery of Submittals

   a. All submittals shall be submitted electronically per P&D's Electronic Design Review Process for Tenant Projects (Appendix A).

2. Submittals to P&D

   a. Tenant Review (review submittal).

      i. Sealed drawings by the State of Georgia Engineer/Architect of Record are not required for this submittal.

   b. Issue for Construction (Final Conformed/Permitting) Sealed drawings by the State of Georgia Architect/Engineer of Record are required for this submittal. Submit the following Source Files:

      i. PDF and CAD format of the sealed and signed plans

      ii. PDF and Word format of the signed and sealed specifications

      iii. PDF format of the design calculations

      iv. File Share Revit files if applicable to Sages Design Review Coordinator or deliver a flash drive with listed project files to ATL P&D

B. Review Timing

1. P&D's Preliminary submittal review time shall be ten (10) business days.
2. Designer / Submitter comment response review shall be ten (10) business days
3. P&D's Final submittal review time shall be a maximum of ten (10) business days.
4. P&D/AFD final Issue for Construction stamp acceptance of digital drawings and Release Notification letter shall be a maximum of five (5) business days.
5. AFD's review time and their resolution is not controlled by P&D. These conditions may be subject to additional review time and full acceptance of the documents.

C. Review Responsibility

1. P&D's technical review and stamped acceptance of documents is solely for compliance with ATL P&D's Tenant New Construction and Modifications Design and Construction Standards. Latest revision located at: (https://atlstandards.com)
2. City of Atlanta Office of Buildings, Atlanta Fire Department and Department of Watershed Management are responsible for code reviews. Compliance with City,

   a. State and Federal Codes, Regulations and Ordinances shall be the responsibility of the Tenants/Designers of Record.

3. Tenants/Designers of Record shall be responsible for any liability resulting from their design and construction. As well as any errors, omissions and any other conditions resulting from the submitted Issue for Construction documents.

5.0 PROJECT REQUIREMENTS

A. Design/Construction Standards: Tenants/Designers of Record shall be responsible for adhering to all P&D's Tenant New Construction and Modifications Design and Constructions Standards. Latest revision located at: (https://atlstandards.com)

B. Building Permit: Tenants/Designer of Record shall be responsible for submitting the P&D/AFD stamped accepted documents and the copy of P&D's Release Letter (per OOB request) to OOB for permitting. OOB will not accept any submittal and/or issue a permit without the P&D/AFD stamped acceptance and copy of P&D's Release Letter.

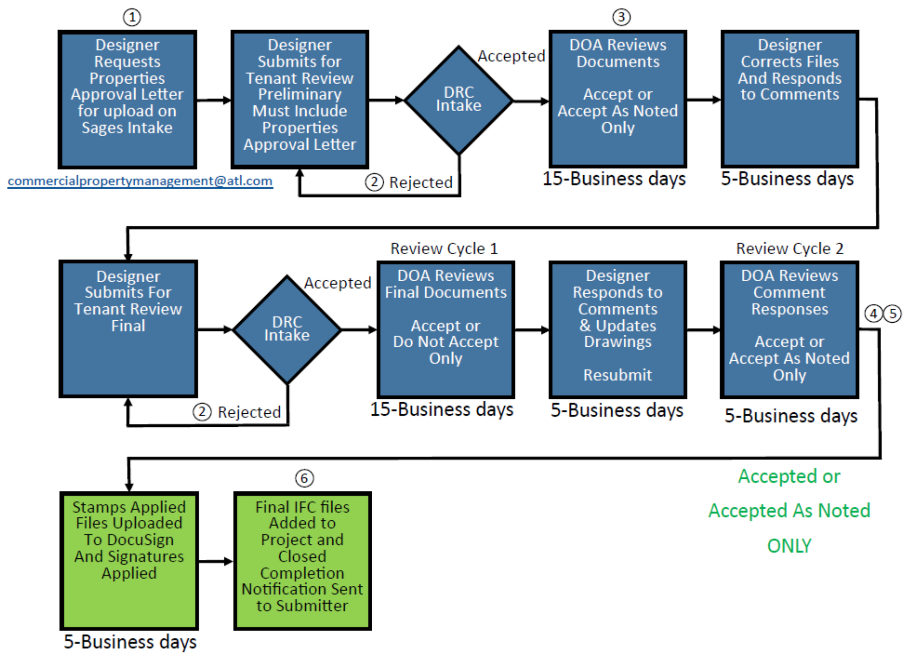
C. As-Builts: At project completion, Tenants shall be responsible for submitting to P&D the following:

1. Two (2) USB Flash drives for P&D, containing the final AS-Built drawings in CAD/PDF format and specifications in Word/PDF format.

6.0 APPENDICES

Appendix A: Design Review Process for Tenant Projects

Design Review Process for Tenant Projects



NOTES:

① Pre-approval letter for review must be obtained from Properties before Sages Submittal @ commercialpropertymanagement@atl.com

② Intake rejections can occur due to missing or incomplete package files and improper Cover Page or Title Block entries.

③ If Reviewer assesses that the design submittal is not technically acceptable, it can be rejected by the Director of Architecture/Engineering upon the request of the Reviewer. A meeting with the Designer shall be scheduled immediately to resolve the issues and/or move forward with the Assessment.

④ Tenant Final Review is 2 Cycles Only. Accept and Accept As Noted are the only Final Submittal Options.

⑤ For any unresolved review comments after Review Cycle 2, the Designer accepts full responsibility to address these comment issues before submitting for IFC documents. There is no review after Review Cycle 2. Any rejection by City of Atlanta, Office Of Buildings (OOB) for comments made by DOA reviewers and not corrected, is the sole responsibility of the Designer.

⑥ Designer / Submitter collects IFC files from completed project for submittal to City of Atlanta, Office Of Buildings (OOB)

Revision 07/14/2025

Hartsfield-Jackson Atlanta International Airport

City of Atlanta
Department of Aviation
Office of Infrastructure Planning & Development

Tenant New Construction and Modifications

Design Standards

Civil Engineering

Design Standards Civil

Table of Contents

Design Standards Civil

1.0 Purpose

A. The purpose of this document is to provide the Tenant and their Designer of Record with the Civil design detail standards and specifications that shall be used for any new construction and/or modification at Hartsfield-Jackson Atlanta International Airport.

2.0 General

A. All design work shall be performed in accordance with generally accepted professional principles and practices for civil engineering and in compliance with all applicable Federal, State and City of Atlanta Design Codes, Standards and Regulations and the following DOA/P&D Civil Design Standards and Specifications:

3.0 DOA/P&D Civil Design Standards (Attached)4

A. Airside – Runways, Taxiways & Aprons

STD-01-100	Airfield Typical Pavement Sections
STD-01-200	Typical Pavement Sections NLVR
STD-01-300	Apron Underdrain Details – New Pavement
STD-01-301	Underdrain Details – Replacement Projects
STD-01-400	In-Pavement Manholes
STD-01-500	In-Pavement Inlets Type “A”
STD-01-501	In-Pavement Inlets Type “B” and Type “B” Mod. Detail
STD-01-502	In-Pavement Inlets type “D”
STD-01-503	Slope Drain Detail
STD-01-504	Paved Drainage Path Detail
STD-01-505	Miscellaneous Drainage Details
STD-01-600	Pavement Joint Details-New Projects
STD-01-700	Pavement Joint Details- Replacement Projects 1
STD-01-701	Pavement Joint Details- Replacement Projects 2
STD-01-702	Existing Pavement Removal and Replacement of Hydrants
STD-01-703	Spall and Joint Repair Details
STD-01-704	Typical Spall Repair Rebar Placement Detail
STD-01-705	Retrofit Conduit Trench Repair Detail
STD-01-800	Apron Striping and Marking – 1
STD-01-801	Apron NLVR Striping and Signage
STD-01-802	Runway Striping and Marking – 1
STD-01-803	Runway Striping and Marking – 2
STD-01-804	Taxiway Striping, Marking, and Signage
STD-01-805	Taxiway Striping and Marking
STD-01-900	Miscellaneous Airfield Details

A. Landside – Roads & Parking

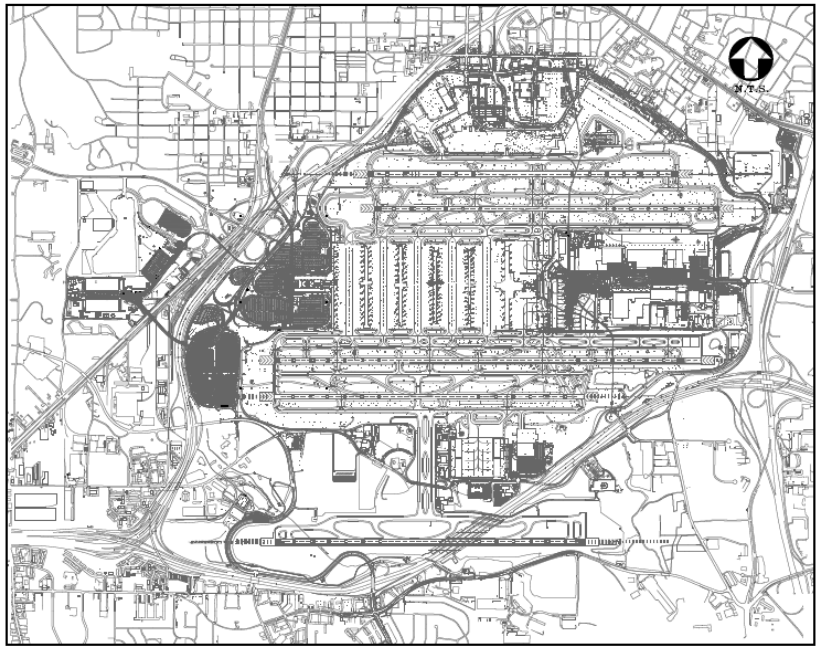
STD-02-100	Typical Pavement Sections – Roadways
STD-02-101	Typical Pavement Sections - Parking
STD-02-200	Joints – NLVR or Landside Roads
STD-02-300	Landside Striping and Marking Details
STD-02-400	Landside Signage
STD-02-500	Landside Drainage - 1
STD-02-501	Landside Drainage - 2

B. General Details

STD-03-100	Settlement Platforms
STD-03-200	Chain Link Fences – 1
STD-03-201	Chain Link Fences – 2
STD-03-202	Chain Link Fences – 3
STD-03-203	Chain Link Fences – 4
STD-03-204	Chain Link Fences – 5
STD-03-205	Chain Link Fences – 6
STD-03-206	Chain Link Fences- Signage
STD-03-300	Typical Grease Interceptor Installation
STD-03-301	Typical Grease Interceptor Installation
STD-03-302	Below Pavement Grease Interceptor
STD-03-303	Utility Slab Detail for Interceptor Below Pavement
STD-03-304	Additional Pavement Removal
STD-03-400	Pipe Bedding Type “B” and “C” Paved Ditch Detail
STD-03-401	Precast Junction Chamber
STD-03-402	Concrete Pipe Collar, Cleanout, Cap for Exist. Inlet
STD-03-403	Riser Tee Manhole for Existing or Proposed Pipe
STD-03-404	Misc Pipe Details
STD-03-405	Waterline Bedding and Excavation Section
STD-03-500	Standard Manhole and Type “E” Inlet
STD-03-600	Bollard Details
STD-03-601	Miscellaneous Paving and Bumper Block Details
STD-03-700	General Notes and Construction Control Plan Airside
STD-03-701	General Notes and Construction Control Plan Landside

CITY OF ATLANTA
HARTSFIELD–JACKSON ATLANTA INTERNATIONAL AIRPORT

DOA CIVIL STANDARD DETAILS



CITY OF ATLANTA, GEORGIA

Hartsfield-Jackson Atlanta International Airport

DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT

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

DOA CIVIL STANDARD DETAILS

NO.	DATE	BY	REVISION
1	06/2025	RFM	REVISED
0	06/20/2014	RFM	FIRST ISSUE

THESE DRAWINGS SHOULD NOT BE USED FOR CONSTRUCTION UNLESS NOTED BELOW AS "RELEASED FOR CONSTRUCTION" AND SIMILARLY NOTED ON EACH INDIVIDUAL DRAWING.

RELEASED FOR CONSTRUCTION BY: _____

DATE: _____

SHEET NO:
STD-00-100

DOA CIVIL STANDARD DETAILS

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CIVIL DOA STANDARD DETAILS — RELEASE STATUS SUMMARY

DWG NO	SHEET NO.	SHEET TITLE	ISSUED	REV1	REV2	REV3	REV4	REV5	REV6	COMMENTS
			DATE OF LATEST RELEASE							
1	STD-00-100	Cover Sheet	06/20/2014	08/2019						
2	STD-00-200	DOA Civil Standard Details Index	06/20/2014	08/2019						
3	STD-00-201	DOA Civil Standard Details Index		08/2019						
		STD-01 AIRSIDE - RUNWAYS TAXIWAYS AND APRONS								
1	STD-01-100	Airfield Typical Pavement Sections	06/20/2014	08/2019	11/2020					
2	STD-01-200	Typical Pavement Sections NLVR	06/20/2014	08/2019						
3	STD-01-300	Apron Underdrain Details - New Pavement	06/20/2014							
4	STD-01-301	Underdrain Details - Replacement Projects	06/20/2014							
5	STD-01-400	In-Pavement Manholes	06/20/2014							
6	STD-01-500	In-Pavement Inlets Inlet Type 'A'	06/20/2014	08/2019						
7	STD-01-501	Infield Inlets Type 'B' and Type 'B' Modified	06/20/2014	08/2019						
8	STD-01-502	In-Pavement Inlet Type 'D'	06/20/2014							
9	STD-01-503	Slope Drain Detail	06/20/2014	08/2019						
10	STD-01-504	Paved Drainage Path Detail	06/20/2014							
11	STD-01-505	Miscellaneous Drainage Details	06/20/2014							
12	STD-01-600	Pavement Joint Details - New Projects	06/20/2014							
13	STD-01-700	Pavement Joint Details - Replacement Projects-1	06/20/2014							
14	STD-01-701	Pavement Joint Details - Replacement Projects-2	06/20/2014							
15	STD-01-702	Exist. Pavement Removal and Replacement for Fuel Hydrants	06/20/2014	08/2019						
16	STD-01-703	Spall and Joint Repair Details	06/20/2014							
17	STD-01-704	Typical Spall Repair Rebar Placement Detail	06/20/2014							
18	STD-01-705	Retrofit Conduit Trench Repair Details	06/20/2014							
19	STD-01-800	Apron Striping and Marking	06/20/2014							
20	STD-01-801	Apron NLVR Striping and Signage	06/20/2014		11/2020					
21	STD-01-802	Runway Striping and Marking-1	06/20/2014							
22	STD-01-803	Runway Striping and Marking-2	06/20/2014							
23	STD-01-804	Taxiway Striping, Marking, and Signage	06/20/2014							
24	STD-01-805	Taxiway Striping and Marking	06/20/2014							
25	STD-01-900	Miscellaneous Airfield Details	06/20/2014							
		STD-02 LANDSIDE - ROADS AND PARKING								
1	STD-02-100	Typical Pavement Sections - Roadways	06/20/2014	08/2019						
2	STD-02-101	Typical Pavement Sections - Parking	07/14/2016							
3	STD-02-200	Joints - NLVR or Landside Roads	06/20/2014	08/2019	11/2020					
4	STD-02-300	Landside Striping and Marking Details	06/20/2014							
5	STD-02-400	Landside Signage	06/20/2014							
6	STD-02-500	Landside Drainage-1	06/20/2014							
7	STD-02-501	Landside Drainage-2	06/20/2014							
		STD-03 GENERAL DETAILS								
1	STD-03-100	Settlement Platforms	06/20/2014							
2	STD-03-200	Chain Link Fences - 1	06/20/2014							
3	STD-03-201	Chain Link Fences - 2	06/20/2014	08/2019						
4	STD-03-202	Chain Link Fences - 3	06/20/2014	08/2019	11/2020					
5	STD-03-203	Chain Link Fences - 4	06/20/2014	08/2019						
6	STD-03-204	Chain Link Fences - 5	06/20/2014	08/2019						
7	STD-03-205	Chain Link Fences - 6	06/20/2014	08/2019						
8	STD-03-206	Chain Link Fence - Signage	06/20/2014	08/2019						
9	STD-03-300	Typical Grease Interceptor Installation	06/20/2014	08/2019						
10	STD-03-301	Typical Grease Interceptor Installation	06/20/2014	08/2019						
11	STD-03-302	Below Pavement Grease Interceptor Details	06/20/2014	08/2019						
12	STD-03-303	Utility Slab Detail For Interceptor Below Pavement	06/20/2014	08/2019						
13	STD-03-304	Additional Pavement Removal	06/20/2014	08/2019						
14	STD-03-400	Pipe Bedding Type 'B' and 'C', Paved Ditch Detail	06/20/2014	08/2019						
15	STD-03-401	Precast Junction Chamber	06/20/2014							
16	STD-03-402	Concrete Pipe Collar, Cleanout, Cap for Exist. Inlet	06/20/2014							
17	STD-03-403	Riser Tee Manhole for Existing or Proposed Pipe	06/20/2014							
18	STD-03-404	Misc Pipe Details	06/20/2014	08/2019						
19	STD-03-405	Waterline Bedding and Excavation Section	6/20/2014	08/2019						
20	STD-03-500	Standard Manhole and Type E Inlet	06/20/2014							
21	STD-03-600	Bollard Details	06/20/2014	08/2019						

CITY OF ATLANTA, GEORGIA

Hartsfield-Jackson
Atlanta International Airport

DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT

NO.	DATE	BY	REVISION
1	08/2019	RFM	REVISED
0	06/20/2014	RFM	FIRST ISSUE

DOA CIVIL STANDARD DETAILS

DOA Civil Standard Details
Index

BIS NUMBER: -	DRAWN BY: STAFF
FC NUMBER: -	DESIGNED BY: STAFF
CONSULTANT PROJECT NUMBER: -	CHECKED BY: STAFF
STANDARD SHEET NUMBER: STD-00-200	APPROVED BY: STAFF
	DATE: -
	SCALE:
	SHEET NO: -

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23	STD-03-700	General Notes and Construction Control Plan Airside	06/20/2014								
24	STD-03-701	General Notes and Construction Control Plan Landside	06/20/2014								
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CITY OF ATLANTA, GEORGIA

Hartsfield-Jackson
Atlanta International Airport

DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT

NO.	DATE	BY	REVISION
1	06/2019	RFM	REVISED
0	06/20/2014	RFM	FIRST ISSUE

DOA CIVIL STANDARD DETAILS

DOA Civil Standard Details
Index

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FC NUMBER: -	DESIGNED BY: STAFF
CONSULTANT PROJECT NUMBER: -	CHECKED BY: STAFF
STANDARD SHEET NUMBER: STD-00-201	APPROVED BY: STAFF
	DATE: -
	SCALE:
	SHEET NO: -

DOA CIVIL STANDARD DETAILS

NOT RELEASED FOR CONSTRUCTION

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STD-01 AIRSIDE - RUNWAYS TAXIWAYS AND APRONS

Hartsfield-Jackson
Atlanta International Airport

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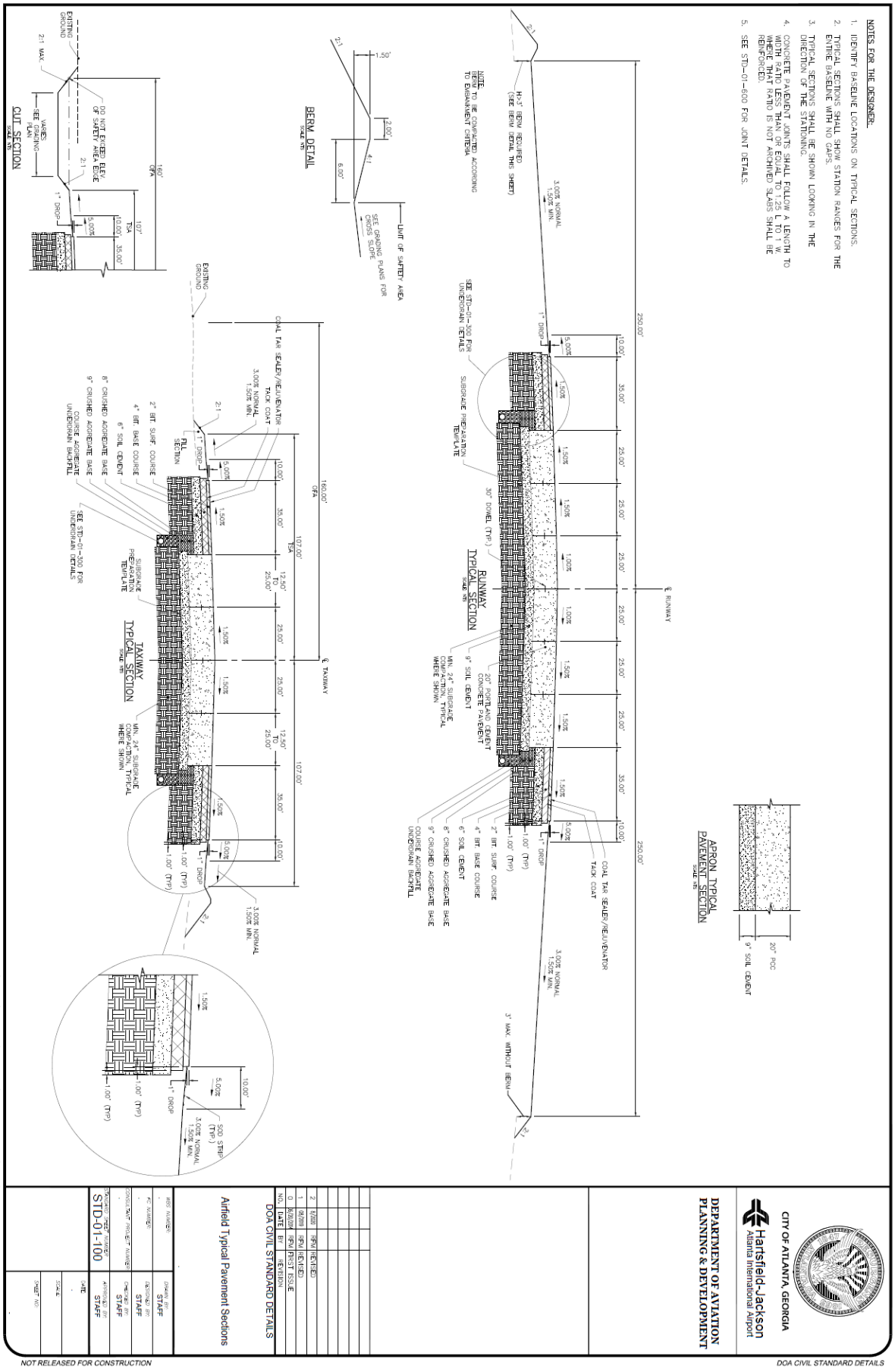
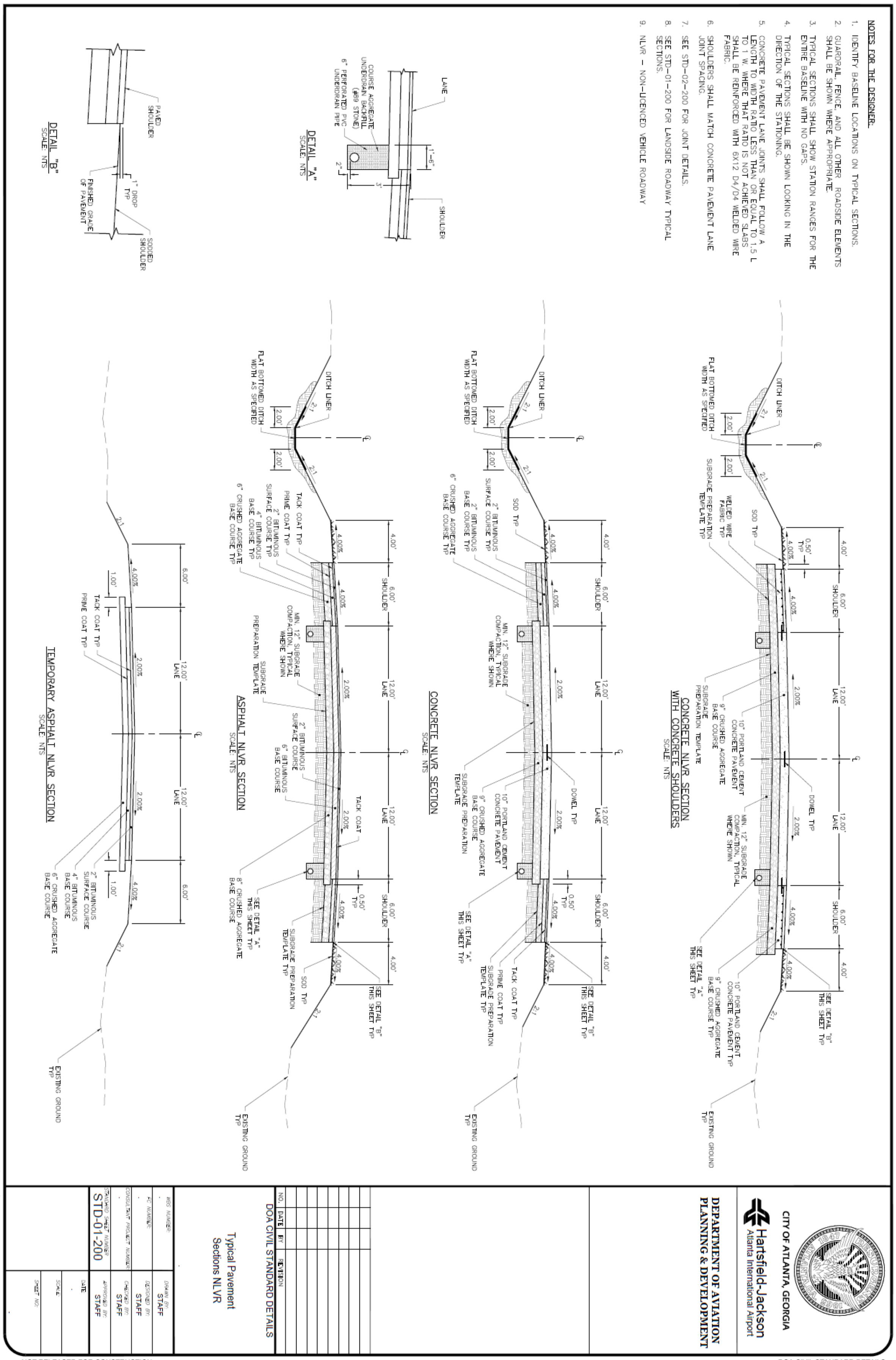
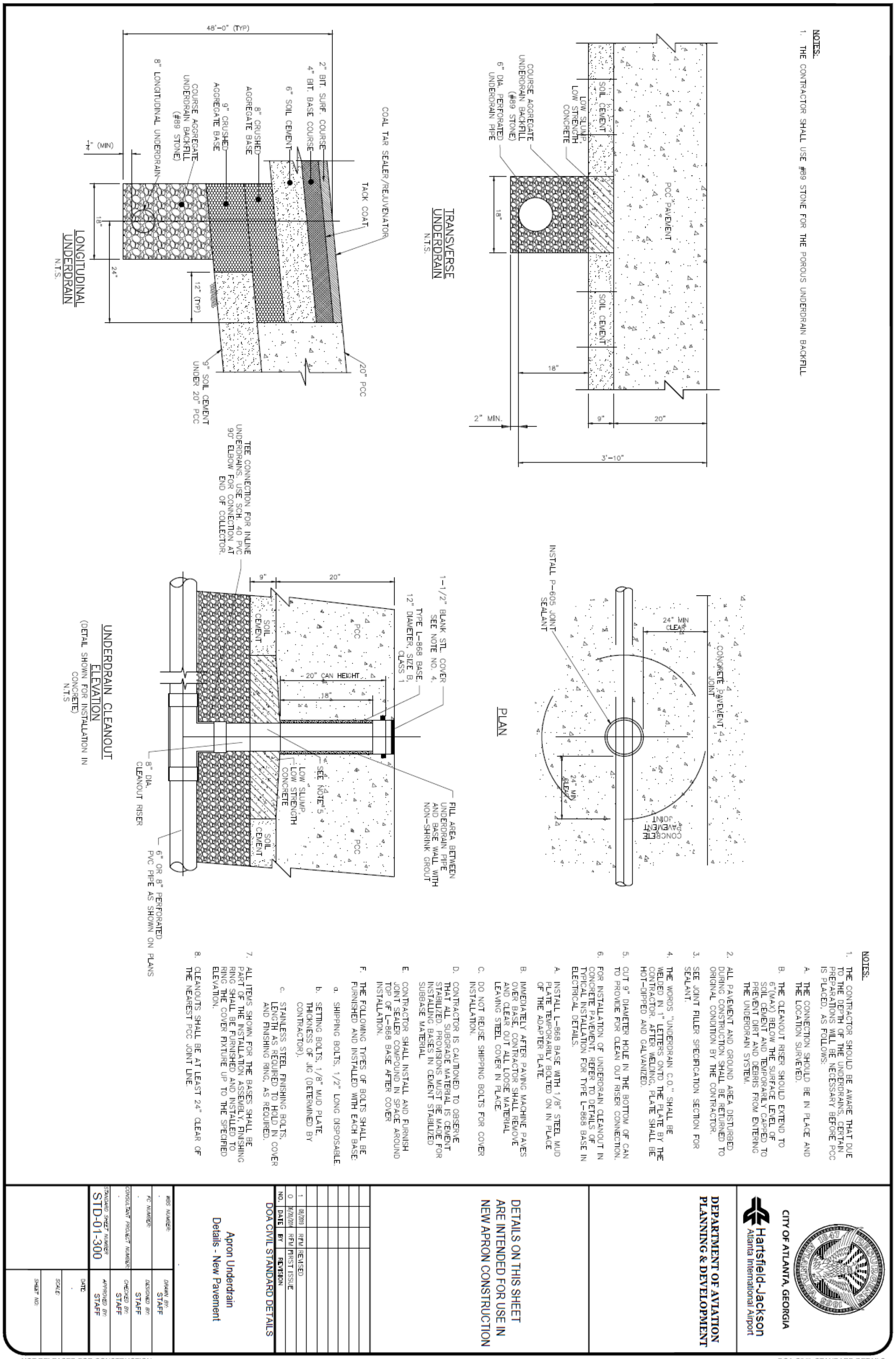
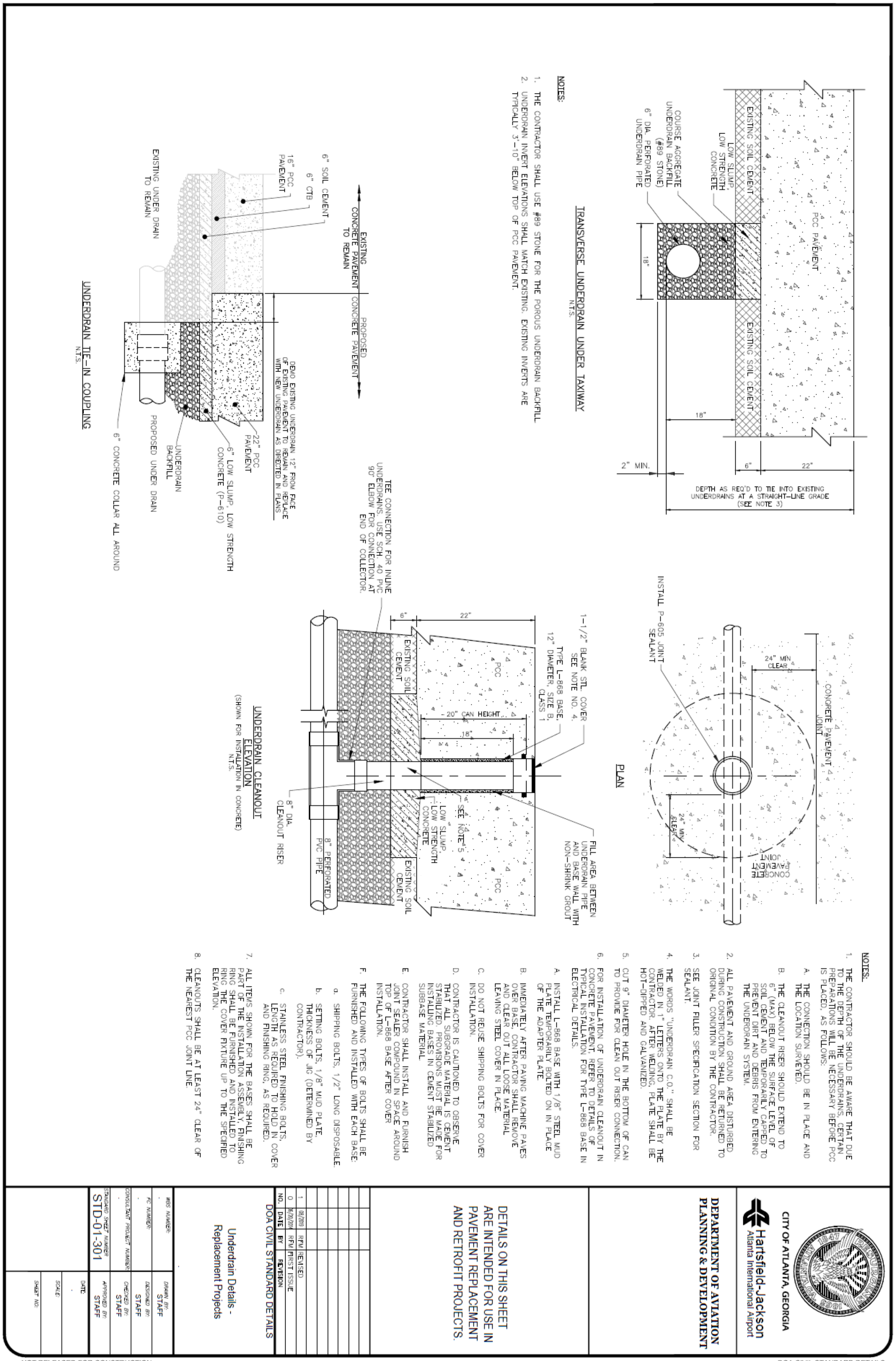

NOTES FOR THE DESIGNER:
1. IDENTIFY BASELINE LOCATIONS ON TYPICAL SECTIONS.
2. TYPICAL SECTIONS SHALL SHOW STATION RANGES FOR THE ENTIRE BASELINE WITH NO GAPS.
3. TYPICAL SECTIONS SHALL BE SHOWN LOOKING IN THE DIRECTION OF THE STATIONING.
4. CONCRETE PAVEMENT JOINTS SHALL FOLLOW A LENGTH TO WIDTH RATIO LESS THAN OR EQUAL TO 1.25 L TO 1 W. WHERE THAT RATIO IS NOT ARCHIVED SLABS SHALL BE REINFORCED.
5. SEE STD-01-600 FOR JOINT DETAILS.
CUT SECTION
BERM DETAIL
RUNWAY TYPICAL SECTION
APRON TYPICAL PAVEMENT SECTION
TAXIWAY TYPICAL SECTION
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
Airfield Typical Pavement Sections
STD-01-100
NOT RELEASED FOR CONSTRUCTION


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 PAVEMENT 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 D4/D4 WELDED WIRE FABRIC.
6. SHOULDERS SHALL MATCH CONCRETE PAVEMENT LANE JOINT SPACING.
7. SEE STD-02-200 FOR JOINT DETAILS.
8. SEE STD-01-200 FOR LANDSIDE ROADWAY TYPICAL SECTIONS.
9. NLVR - NON-LICENCED VEHICLE ROADWAY
CONCRETE NLVR SECTION WITH CONCRETE SHOULDERS
SCALE: NTS
CONCRETE NLVR SECTION
SCALE: NTS
ASPHALT NLVR SECTION
SCALE: NTS
TEMPORARY ASPHALT NLVR SECTION
SCALE: NTS
DETAIL "A"
SCALE: NTS
DETAIL "B"
SCALE: NTS
DITCH LINER
FLAT BOTTOMED DITCH WIDTH AS SPECIFIED
SOD TYP
WELDED WIRE FABRIC TYP
SUBGRADE PREPARATION TEMPLATE TYP
10" PORTLAND CEMENT CONCRETE PAVEMENT
9" CRUSHED AGGREGATE BASE COURSE
MIN. 12" SUBGRADE COMPACTION, TYPICAL WHERE SHOWN
DOWEL TYP
SEE DETAIL "A" THIS SHEET TYP
SEE DETAIL "B" THIS SHEET TYP
EXISTING GROUND TYP
2" BITUMINOUS SURFACE COURSE TYP
2" BITUMINOUS BASE COURSE TYP
6" CRUSHED AGGREGATE BASE COURSE TYP
TACK COAT TYP
PRIME COAT TYP
4" BITUMINOUS BASE COURSE TYP
6" BITUMINOUS BASE COURSE
8" CRUSHED AGGREGATE BASE COURSE
LANE
SHOULDER
COURSE AGGREGATE UNDERDRAIN BACKFILL (#89 STONE)
6" PERFORATED PVC UNDERDRAIN PIPE
PAVED SHOULDER
SODDED SHOULDER
1" DROP TYP
FINISHED GRADE OF PAVEMENT
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
NO. DATE BY REVISION
DOA CIVIL STANDARD DETAILS
Typical Pavement Sections NLVR
STANDARD SHEET NUMBER
STD-01-200
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
NOT RELEASED FOR CONSTRUCTION
q:\facilities\engineering\cadd library\doa standard details\details\std-01-200 typical pavement sections nlvr.dwg


NOTES:
1. THE CONTRACTOR SHALL USE #89 STONE FOR THE POROUS UNDERDRAIN BACKFILL.
PCC PAVEMENT
SOIL CEMENT
SOIL CEMENT
LOW SLUMP, LOW STRENGTH CONCRETE
COURSE AGGREGATE UNDERDRAIN BACKFILL (#89 STONE)
6" DIA. PERFORATED UNDERDRAIN PIPE
18"
20"
9"
18"
3'-10"
2" MIN.
TRANSVERSE UNDERDRAIN
N.T.S.
CONCRETE PAVEMENT JOINT
24" MIN CLEAR
CONCRETE PAVEMENT JOINT
24" MIN CLEAR
INSTALL P-605 JOINT SEALANT
PLAN
COAL TAR SEALER/REJUVENATOR
TACK COAT
20" PCC
2" BIT. SURF. COURSE
4" BIT. BASE COURSE
6" SOIL CEMENT
8" CRUSHED AGGREGATE BASE
9" CRUSHED AGGREGATE BASE
COURSE AGGREGATE UNDERDRAIN BACKFILL (#89 STONE)
8" LONGITUDINAL UNDERDRAIN
48'-0" (TYP)
12" (TYP)
9" SOIL CEMENT UNDER 20" PCC
24"
18"
1/4" (MIN)
LONGITUDINAL UNDERDRAIN
N.T.S.
1-1/2" BLANK STL. COVER SEE NOTE NO. 4.
TYPE L-868 BASE, 12" DIAMETER, SIZE B, CLASS 1
FILL AREA BETWEEN UNDERDRAIN PIPE AND BASE WALL WITH NON-SHRINK GROUT
PCC
PCC
20"
20" CAN HEIGHT
18"
SEE NOTE 5
LOW SLUMP, LOW STRENGTH CONCRETE
9"
SOIL CEMENT
SOIL CEMENT
TEE CONNECTION FOR INLINE UNDERDRAINS. USE SCH. 40 PVC 90° ELBOW FOR CONNECTION AT END OF COLLECTOR.
8" DIA. CLEANOUT RISER
6" OR 8" PERFORATED PVC PIPE AS SHOWN ON PLANS
UNDERDRAIN CLEANOUT ELEVATION
(DETAIL SHOWN FOR INSTALLATION IN CONCRETE)
N.T.S
NOTES:
1. THE CONTRACTOR SHOULD BE AWARE THAT DUE TO THE DEPTH OF THE UNDERDRAINS, CERTAIN PREPARATIONS WILL BE NECESSARY BEFORE PCC IS PLACED, AS FOLLOWS:
A. THE CONNECTION SHOULD BE IN PLACE AND THE LOCATION SURVEYED.
B. THE CLEANOUT RISER SHOULD EXTEND TO 6"(MAX) BELOW THE SURFACE LEVEL OF SOIL CEMENT AND TEMPORARILY CAPPED TO PREVENT DIRT AND DEBRIS FROM ENTERING THE UNDERDRAIN SYSTEM.
2. ALL PAVEMENT AND GROUND AREA DISTURBED DURING CONSTRUCTION SHALL BE RETURNED TO ORIGINAL CONDITION BY THE CONTRACTOR.
3. SEE JOINT FILLER SPECIFICATION SECTION FOR SEALANT.
4. THE WORDS "UNDERDRAIN C.O." SHALL BE WELDED IN 1" LETTERS ONTO THE PLATE BY THE CONTRACTOR. AFTER WELDING, PLATE SHALL BE HOT-DIPPED AND GALVANIZED.
5. CUT 9" DIAMETER HOLE IN THE BOTTOM OF CAN TO PROVIDE FOR CLEAN OUT RISER CONNECTION.
6. FOR INSTALLATION OF UNDERDRAIN CLEANOUT IN CONCRETE PAVEMENT, REFER TO DETAILS OF TYPICAL INSTALLATION FOR TYPE L-868 BASE IN ELECTRICAL DETAILS.
A. INSTALL L-868 BASE WITH 1/8" STEEL MUD PLATE TEMPORARILY BOLTED ON IN PLACE OF THE ADAPTER PLATE.
B. IMMEDIATELY AFTER PAVING MACHINE PAVES OVER BASE, CONTRACTOR SHALL REMOVE AND CLEAR OUT ALL LOOSE MATERIAL LEAVING STEEL COVER IN PLACE.
C. DO NOT REUSE SHIPPING BOLTS FOR COVER INSTALLATION.
D. CONTRACTOR IS CAUTIONED TO OBSERVE THAT ALL SUBGRADE MATERIAL IS CEMENT STABILIZED. PROVISIONS MUST BE MADE FOR INSTALLING BASES IN CEMENT STABILIZED SUBBASE MATERIAL.
E. CONTRACTOR SHALL INSTALL AND FURNISH JOINT SEALER COMPOUND IN SPACE AROUND TOP OF L-868 BASE AFTER COVER INSTALLATION.
F. THE FOLLOWING TYPES OF BOLTS SHALL BE FURNISHED AND INSTALLED WITH EACH BASE:
a. SHIPPING BOLTS, 1/2" LONG DISPOSABLE.
b. SETTING BOLTS, 1/8" MUD PLATE, THICKNESS OF JIG (DETERMINED BY CONTRACTOR).
c. STAINLESS STEEL FINISHING BOLTS, LENGTH AS REQUIRED TO HOLD IN COVER AND FINISHING RING, AS REQUIRED.
7. ALL ITEMS SHOWN FOR THE BASES SHALL BE PART OF THE INSTALLATION ASSEMBLY, FINISHING RING SHALL BE FURNISHED AND INSTALLED TO RING THE COVER FIXTURE UP TO THE SPECIFIED ELEVATION.
8. CLEANOUTS SHALL BE AT LEAST 24" CLEAR OF THE NEAREST PCC JOINT LINE.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson
Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
DETAILS ON THIS SHEET ARE INTENDED FOR USE IN NEW APRON CONSTRUCTION
1 08/2019 RFM REVISED
0 06/20/2014 RFM FIRST ISSUE
NO. DATE BY REVISION
DOA CIVIL STANDARD DETAILS
Apron Underdrain
Details - New Pavement
WBS NUMBER:
FC NUMBER:
CONSULTANT PROJECT NUMBER:
STANDARD SHEET NUMBER
STD-01-300
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
DATE:
SCALE:
SHEET NO:
DOA CIVIL STANDARD DETAILS
NOT RELEASED FOR CONSTRUCTION
q:\facilities\engineering\cadd library\doa standard details\details\std-01-300 apron underdrain details - new pavement.dwg


PCC PAVEMENT
EXISTING SOIL CEMENT
EXISTING SOIL CEMENT
LOW SLUMP, LOW STRENGTH CONCRETE
COURSE AGGREGATE UNDERDRAIN BACKFILL (#89 STONE)
6" DIA. PERFORATED UNDERDRAIN PIPE
18"
22"
6"
18"
2" MIN.
DEPTH AS REQ'D TO TIE INTO EXISTING UNDERDRAINS AT A STRAIGHT-LINE GRADE (SEE NOTE 3)
TRANSVERSE UNDERDRAIN UNDER TAXIWAY
N.T.S.
NOTES:
1. THE CONTRACTOR SHALL USE #89 STONE FOR THE POROUS UNDERDRAIN BACKFILL.
2. UNDERDRAIN INVERT ELEVATIONS SHALL MATCH EXISTING. EXISTING INVERTS ARE TYPICALLY 3'-10" BELOW TOP OF PCC PAVEMENT.
CONCRETE PAVEMENT JOINT
CONCRETE PAVEMENT JOINT
24" MIN CLEAR
24" MIN CLEAR
INSTALL P-605 JOINT SEALANT
PLAN
1-1/2" BLANK STL. COVER SEE NOTE NO. 4.
TYPE L-868 BASE, 12" DIAMETER, SIZE B, CLASS 1
FILL AREA BETWEEN UNDERDRAIN PIPE AND BASE WALL WITH NON-SHRINK GROUT
PCC
PCC
22"
6"
20" CAN HEIGHT
18"
SEE NOTE 5
LOW SLUMP, LOW STRENGTH CONCRETE
EXISTING SOIL CEMENT
EXISTING SOIL CEMENT
TEE CONNECTION FOR INLINE UNDERDRAINS. USE SCH. 40 PVC 90° ELBOW FOR CONNECTION AT END OF COLLECTOR.
8" PERFORATED PVC PIPE
8" DIA. CLEANOUT RISER
UNDERDRAIN CLEANOUT ELEVATION
(SHOWN FOR INSTALLATION IN CONCRETE)
N.T.S.
EXISTING CONCRETE PAVEMENT TO REMAIN
PROPOSED CONCRETE PAVEMENT
6" SOIL CEMENT
6" CTB
16" PCC PAVEMENT
DEMO EXISTING UNDERDRAIN 12" FROM FACE OF EXISTING PAVEMENT TO REMAIN AND REPLACE WITH NEW UNDERDRAIN AS DIRECTED IN PLANS
22" PCC PAVEMENT
6" LOW SLUMP, LOW STRENGTH CONCRETE (P-610)
UNDERDRAIN BACKFILL
EXISTING UNDER DRAIN TO REMAIN
PROPOSED UNDER DRAIN
6" CONCRETE COLLAR ALL AROUND
UNDERDRAIN TIE-IN COUPLING
N.T.S.
NOTES:
1. THE CONTRACTOR SHOULD BE AWARE THAT DUE TO THE DEPTH OF THE UNDERDRAINS, CERTAIN PREPARATIONS WILL BE NECESSARY BEFORE PCC IS PLACED, AS FOLLOWS:
A. THE CONNECTION SHOULD BE IN PLACE AND THE LOCATION SURVEYED.
B. THE CLEANOUT RISER SHOULD EXTEND TO 6" (MAX) BELOW THE SURFACE LEVEL OF SOIL CEMENT AND TEMPORARILY CAPPED TO PREVENT DIRT AND DEBRIS FROM ENTERING THE UNDERDRAIN SYSTEM.
2. ALL PAVEMENT AND GROUND AREA DISTURBED DURING CONSTRUCTION SHALL BE RETURNED TO ORIGINAL CONDITION BY THE CONTRACTOR.
3. SEE JOINT FILLER SPECIFICATION SECTION FOR SEALANT.
4. THE WORDS "UNDERDRAIN C.O." SHALL BE WELDED IN 1" LETTERS ONTO THE PLATE BY THE CONTRACTOR. AFTER WELDING, PLATE SHALL BE HOT-DIPPED AND GALVANIZED.
5. CUT 9" DIAMETER HOLE IN THE BOTTOM OF CAN TO PROVIDE FOR CLEAN OUT RISER CONNECTION.
6. FOR INSTALLATION OF UNDERDRAIN CLEANOUT IN CONCRETE PAVEMENT, REFER TO DETAILS OF TYPICAL INSTALLATION FOR TYPE L-868 BASE IN ELECTRICAL DETAILS.
A. INSTALL L-868 BASE WITH 1/8" STEEL MUD PLATE TEMPORARILY BOLTED ON IN PLACE OF THE ADAPTER PLATE.
B. IMMEDIATELY AFTER PAVING MACHINE PAVES OVER BASE, CONTRACTOR SHALL REMOVE AND CLEAR OUT ALL LOOSE MATERIAL LEAVING STEEL COVER IN PLACE.
C. DO NOT REUSE SHIPPING BOLTS FOR COVER INSTALLATION.
D. CONTRACTOR IS CAUTIONED TO OBSERVE THAT ALL SUBGRADE MATERIAL IS CEMENT STABILIZED. PROVISIONS MUST BE MADE FOR INSTALLING BASES IN CEMENT STABILIZED SUBBASE MATERIAL.
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F. THE FOLLOWING TYPES OF BOLTS SHALL BE FURNISHED AND INSTALLED WITH EACH BASE:
a. SHIPPING BOLTS, 1/2" LONG DISPOSABLE.
b. SETTING BOLTS, 1/8" MUD PLATE, THICKNESS OF JIG (DETERMINED BY CONTRACTOR).
c. STAINLESS STEEL FINISHING BOLTS, LENGTH AS REQUIRED TO HOLD IN COVER AND FINISHING RING, AS REQUIRED.
7. ALL ITEMS SHOWN FOR THE BASES SHALL BE PART OF THE INSTALLATION ASSEMBLY, FINISHING RING SHALL BE FURNISHED AND INSTALLED TO RING THE COVER FIXTURE UP TO THE SPECIFIED ELEVATION.
8. CLEANOUTS SHALL BE AT LEAST 24" CLEAR OF THE NEAREST PCC JOINT LINE.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson
Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
DETAILS ON THIS SHEET ARE INTENDED FOR USE IN PAVEMENT REPLACEMENT AND RETROFIT PROJECTS.
1 08/2019 RFM REVISED
0 06/20/2014 RFM FIRST ISSUE
NO. DATE BY REVISION
DOA CIVIL STANDARD DETAILS
Underdrain Details -
Replacement Projects
WBS NUMBER: -
FC NUMBER: -
CONSULTANT PROJECT NUMBER: -
STANDARD SHEET NUMBER
STD-01-301
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
DATE: -
SCALE:
SHEET NO:
DOA CIVIL STANDARD DETAILS
NOT RELEASED FOR CONSTRUCTION
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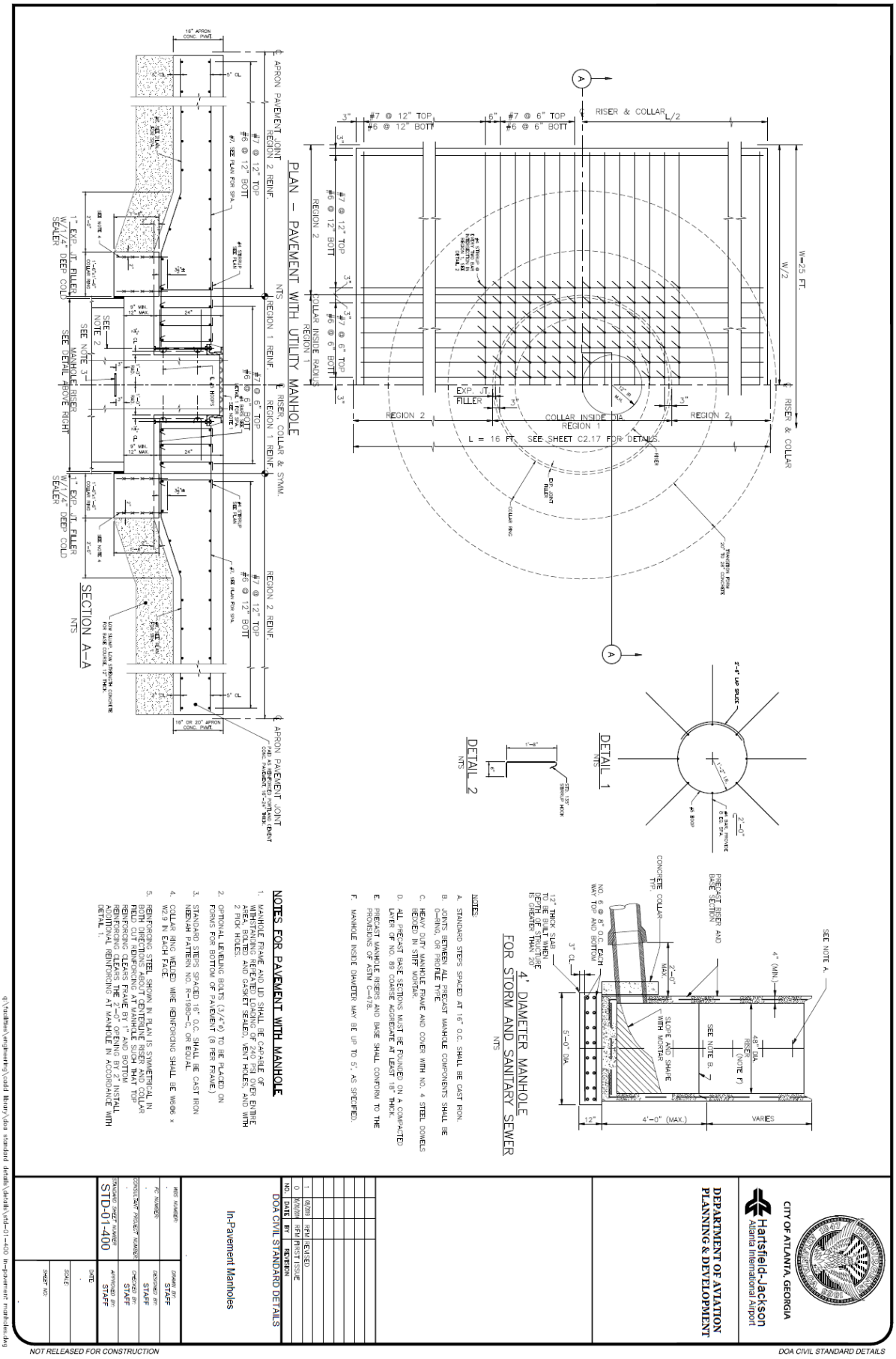
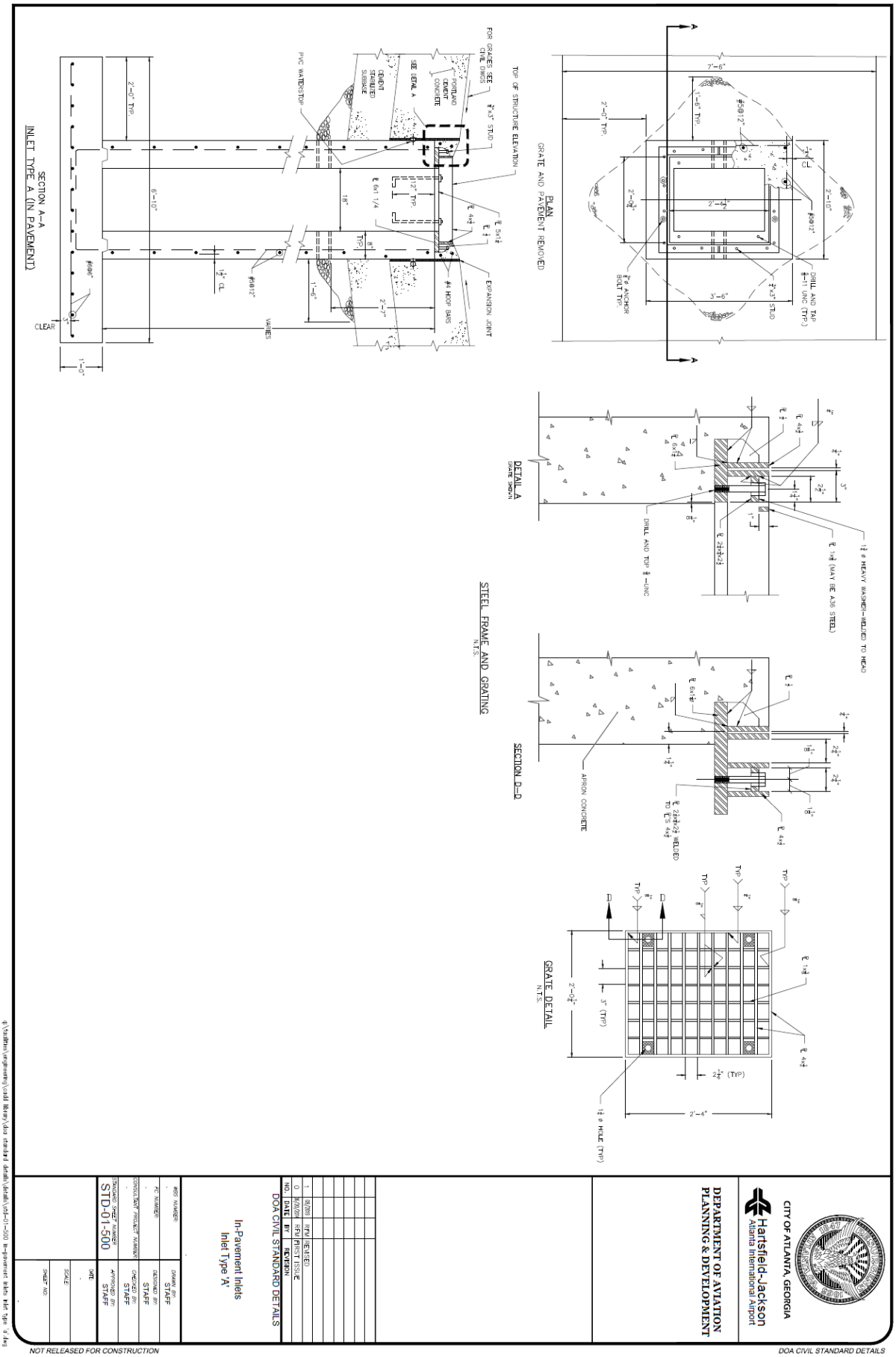
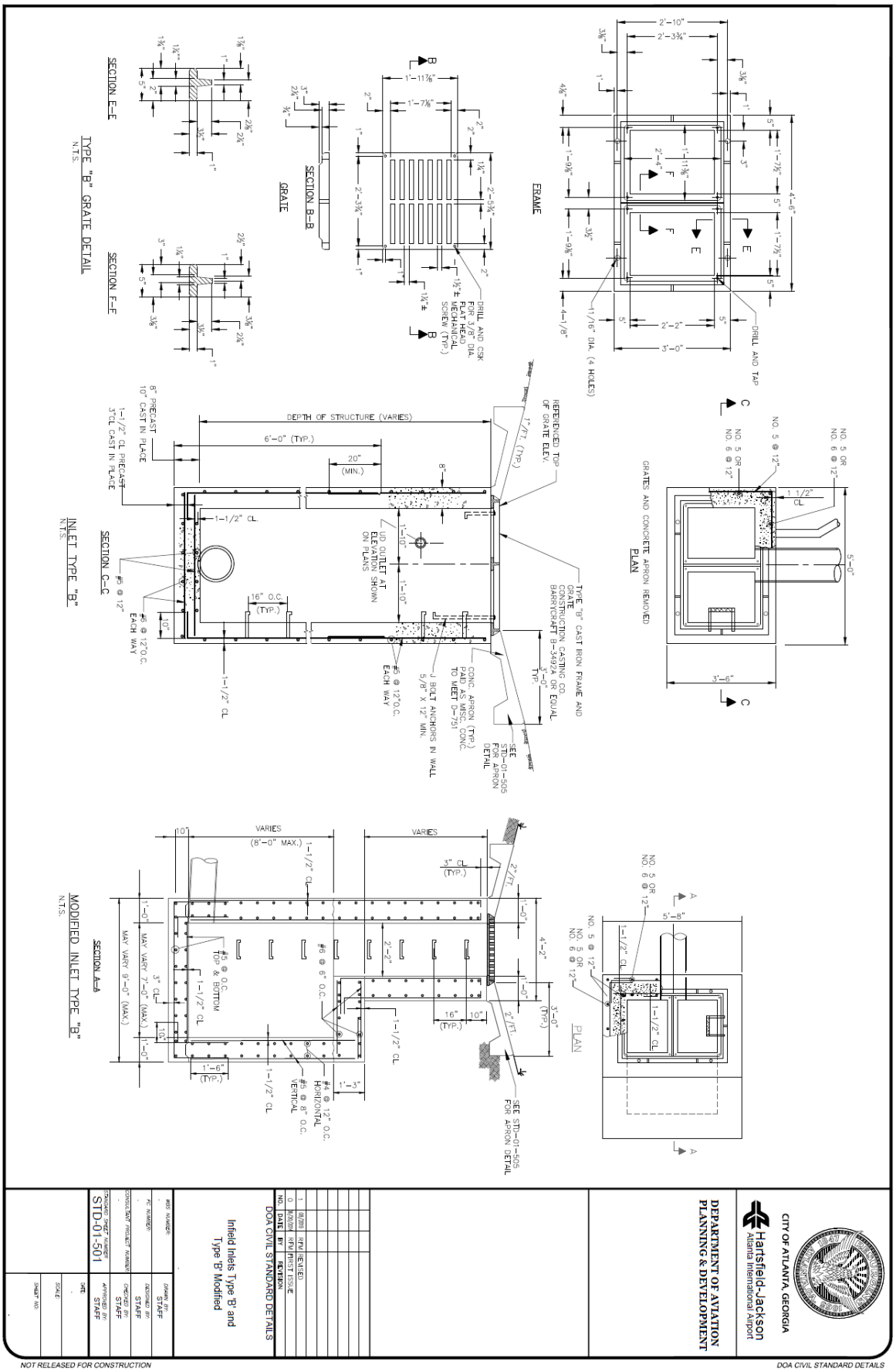
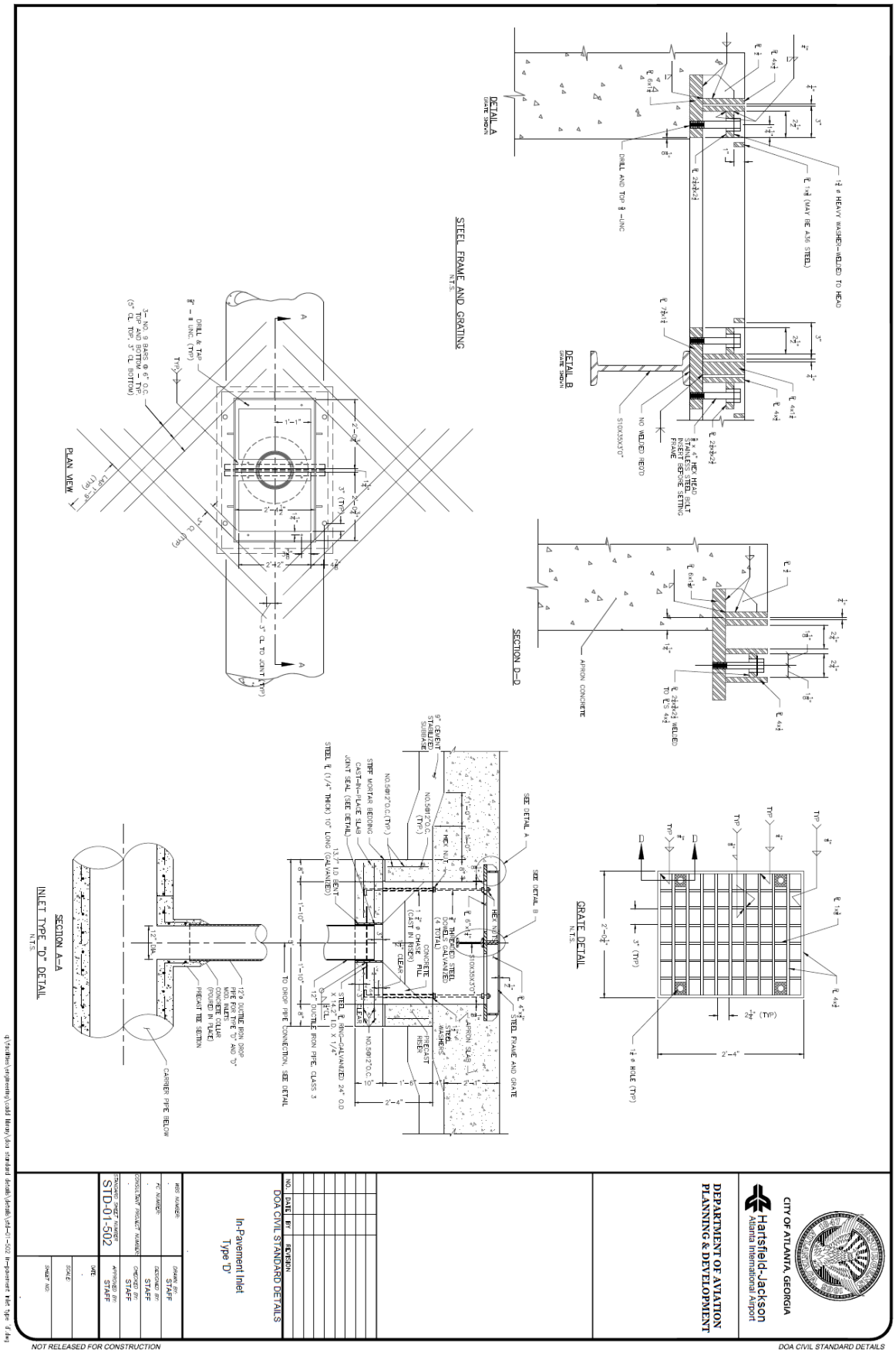
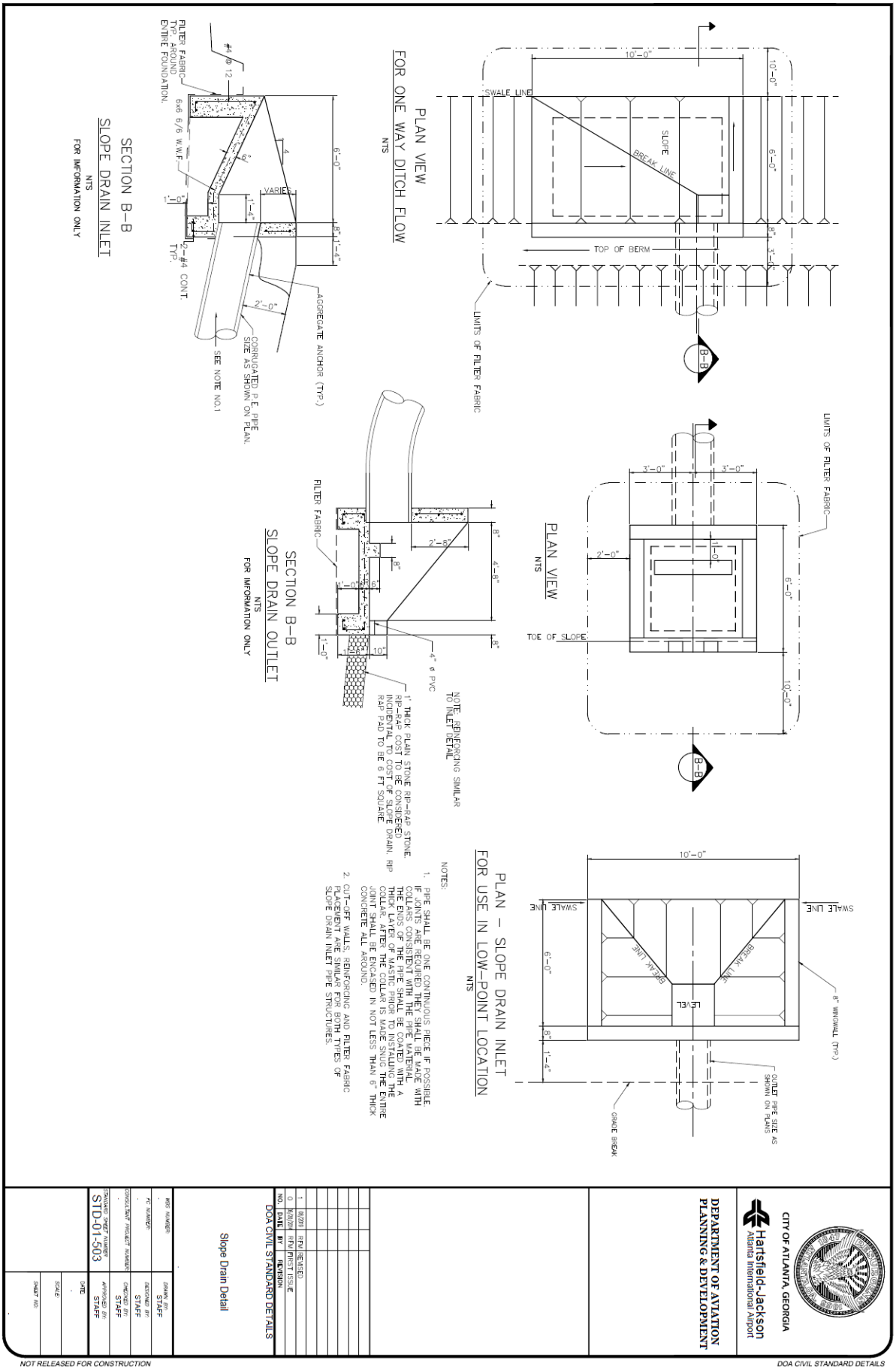
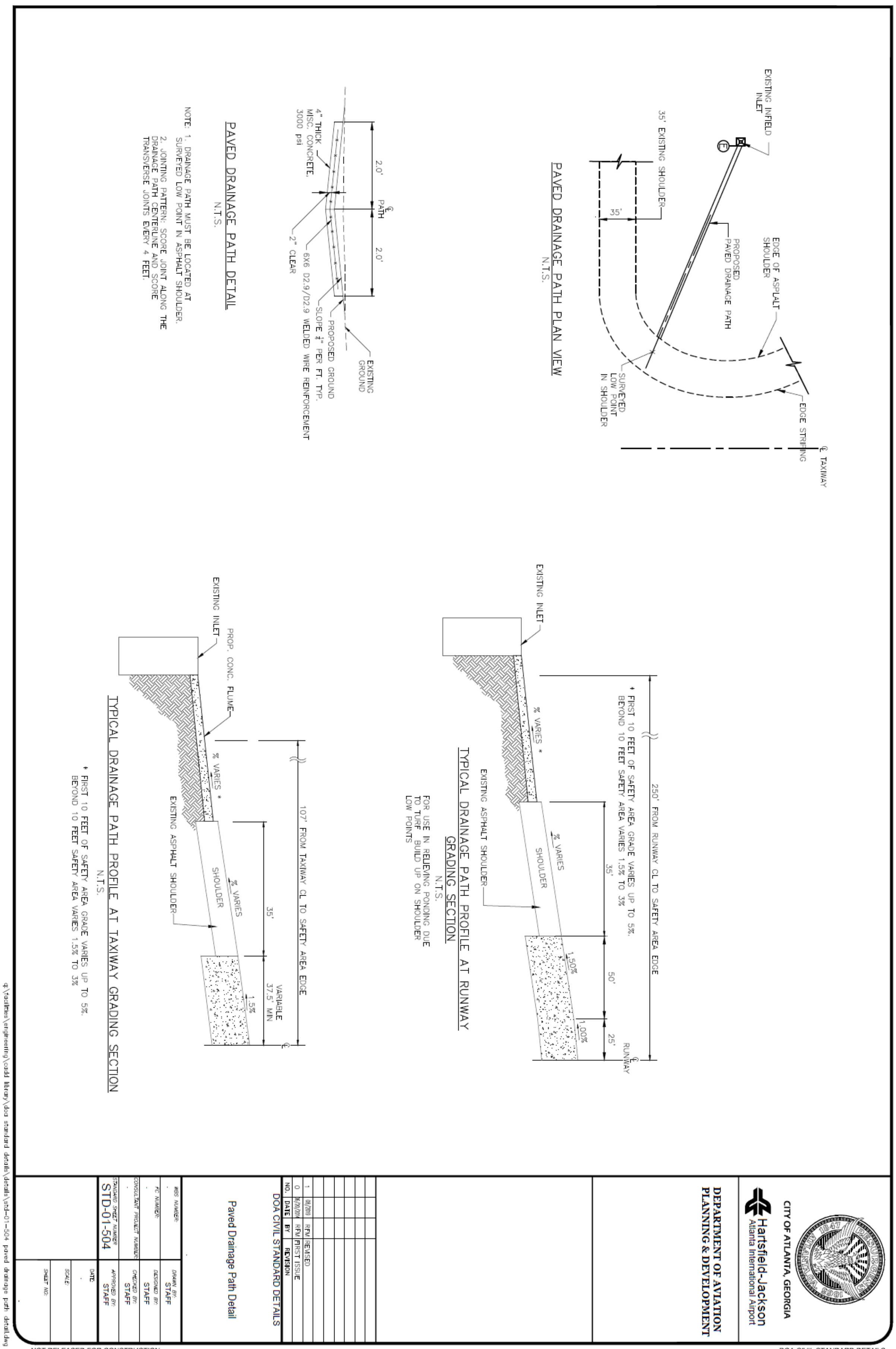

PLAN — PAVEMENT WITH UTILITY MANHOLE
SECTION A-A
DETAIL 1
DETAIL 2
4' DIAMETER MANHOLE FOR STORM AND SANITARY SEWER
NOTES FOR PAVEMENT WITH MANHOLE
NOTES:
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
In-Pavement Manholes
STD-01-400
NOT RELEASED FOR CONSTRUCTION

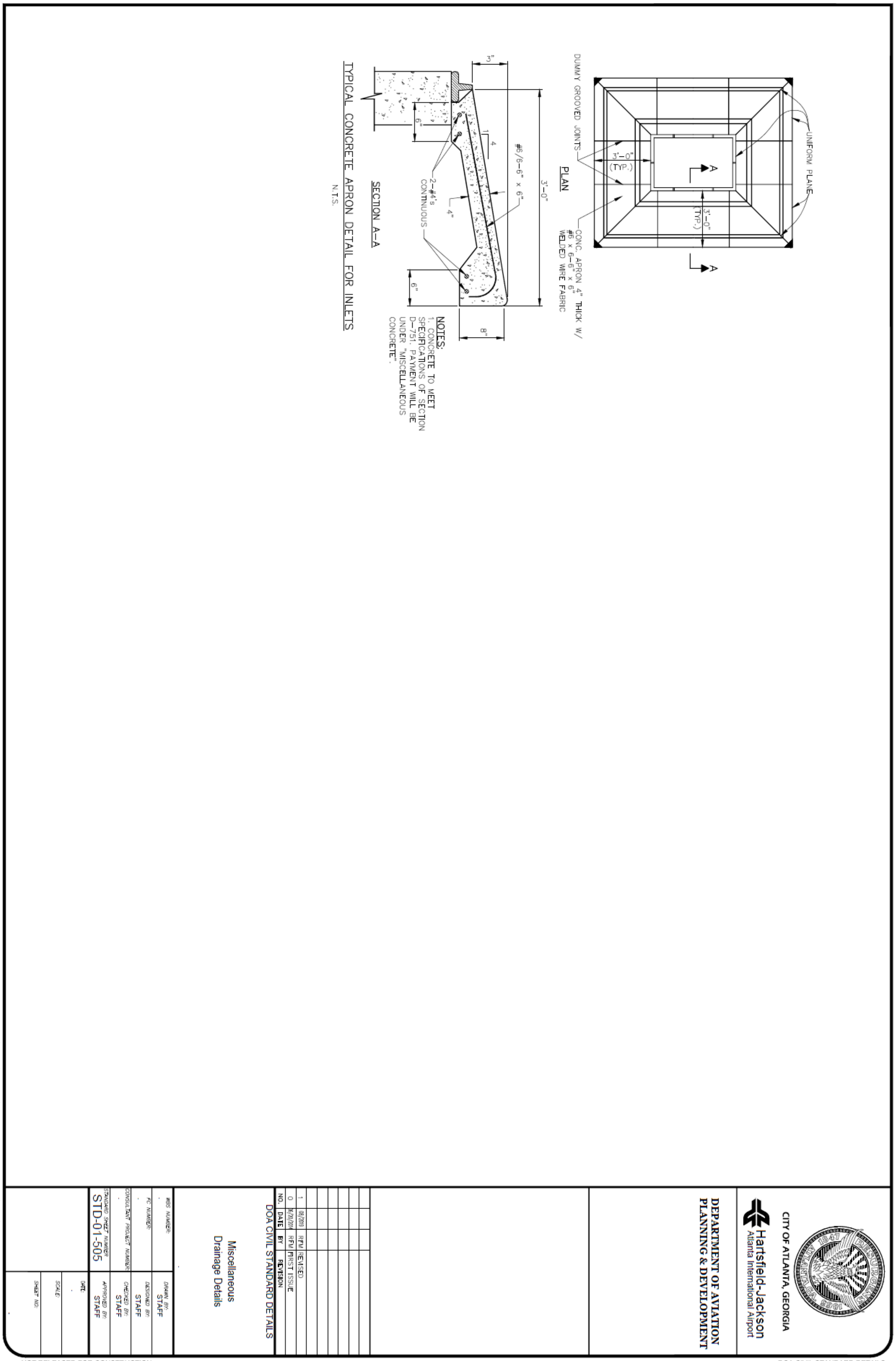

SECTION A–A
INLET TYPE 'A' (IN PAVEMENT)
PLAN
GRATE AND PAVEMENT REMOVED
DETAIL A
SECTION D–D
STEEL FRAME AND GRATING
N.T.S.
GRATE DETAIL
N.T.S.
DOA CIVIL STANDARD DETAILS
In-Pavement Inlets
Inlet Type 'A'
STD-01-500
NOT RELEASED FOR CONSTRUCTION
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson
Atlanta International Airport

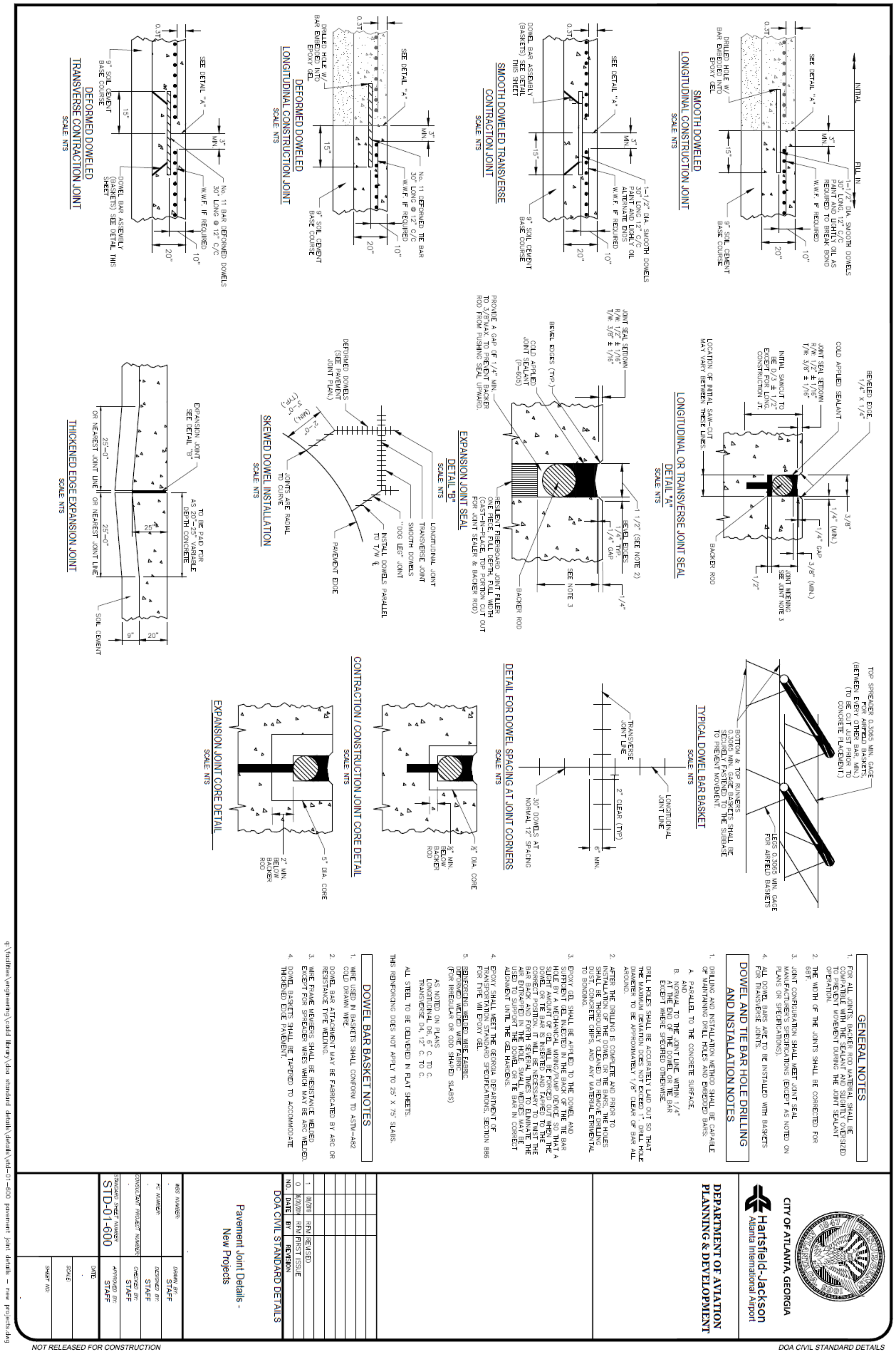

TYPE "B" GRATE DETAIL
N.T.S.
SECTION E-E
SECTION F-F
GRATE
SECTION B-B
FRAME
DRILL AND CSK FOR 3/8" DIA. FLAT HEAD MECHANICAL SCREW (TYP.)
DRILL AND TAP
4-1/16" DIA. (4 HOLES)
INLET TYPE "B"
N.T.S.
SECTION C-C
8" PRECAST TO CAST IN PLACE
1-1/2" CL PRECAST 3" CL CAST IN PLACE
DEPTH OF STRUCTURE (VARIES)
6'-0" (TYP.)
20" (MIN.)
1-1/2" CL
LID OUTLET AT ELEVATION SHOWN ON PLANS
#5 @ 12"
#5 @ 12" O.C. EACH WAY
16" O.C. (TYP.)
1" /FT. (TYP.)
REFERENCED TOP OF GRATE ELEV.
TYPE "B" CAST IRON FRAME AND GRATE CONSTRUCTION CASTING CO. BARRYTON-FT B-3492A OR EQUAL
CONC. APRON (TYP.) PAID AS MISC. CONC. TO MEET D-751
J BOLT ANCHORS IN WALL 5/8" X 12" MIN.
SEE STD-01-505 FOR APRON DETAIL
GRATES AND CONCRETE APRON REMOVED
PLAN
NO. 5 @ 12"
NO. 6 @ 12"
NO. 5 OR NO. 6 @ 12"
MODIFIED INLET TYPE "B"
N.T.S.
SECTION A-A
VARIES
(8'-0" MAX.)
MAY VARY 9'-0" (MAX.)
MAY VARY 7'-0" (MAX.)
#5 @ 6" O.C. TOP & BOTTOM
#5 @ 8" O.C. VERTICAL
#4 @ 12" O.C. HORIZONTAL
2" /FT.
16" (TYP.)
1'-6" (TYP.)
1'-3"
PLAN
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
Infield Inlets Type 'B' and Type 'B' Modified
DOA CIVIL STANDARD DETAILS
STD-01-501
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS

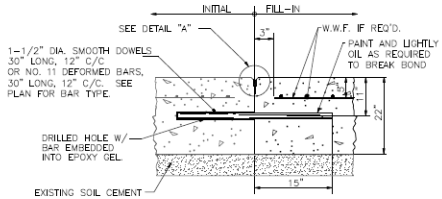

CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
In-Pavement Inlet
Type "D"
STD-01-502
NOT RELEASED FOR CONSTRUCTION
DETAIL A
DETAIL B
SECTION D–D
STEEL FRAME AND GRATING
PLAN VIEW
GRATE DETAIL
INLET TYPE "D" DETAIL
SECTION A–A


PLAN VIEW
FOR ONE WAY DITCH FLOW
NTS
SWALE LINE
SLOPE
BREAK LINE
TOP OF BERM
LIMITS OF FILTER FABRIC
B-B
SECTION B-B
SLOPE DRAIN INLET
NTS
FOR INFORMATION ONLY
FILTER FABRIC TYP. AROUND ENTIRE FOUNDATION.
6x6 6/6 W.W.F.
#4 @ 12
VARIES
2-#4 CONT. TYP.
AGGREGATE ANCHOR (TYP.)
CORRUGATED P.E. PIPE SIZE AS SHOWN ON PLAN.
SEE NOTE NO.1
PLAN VIEW
NTS
LIMITS OF FILTER FABRIC
TOE OF SLOPE
SECTION B-B
SLOPE DRAIN OUTLET
NTS
FOR IMFORMATION ONLY
FILTER FABRIC
4" ø PVC
NOTE: REINFORCING SIMILAR TO INLET DETAIL
1' THICK PLAIN STONE RIP-RAP STONE RIP-RAP COST TO BE CONSIDERED INCIDENTAL TO COST OF SLOPE DRAIN. RIP RAP PAD TO BE 6 FT SQUARE
NOTES:
1. PIPE SHALL BE ONE CONTINUOUS PIECE IF POSSIBLE IF JOINTS ARE REQUIRED THEY SHALL BE MADE WITH COLLARS CONSISTENT WITH THE PIPE MATERIAL THE ENDS OF THE PIPE SHALL BE COATED WITH A THICK LAYER OF MASTIC BEFORE THE COLLAR IS INSTALLED. THE ENTIRE JOINT SHALL BE ENCASED IN NOT LESS THAN 6" THICK CONCRETE ALL AROUND.
2. CUT-OFF WALLS, REINFORCING AND FILTER FABRIC PLACEMENT ARE SIMILAR FOR BOTH TYPES OF SLOPE DRAIN INLET PIPE STRUCTURES.
PLAN - SLOPE DRAIN INLET
FOR USE IN LOW-POINT LOCATION
NTS
10'-0"
SWALE LINE
BREAK LINE
LEVEL
6'-0"
1'-6"
8" WINGWALL (TYP.)
OUTLET PIPE SIZE AS SHOWN ON PLANS
GRADE BREAK
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson
Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
NO. DATE BY REVISION
1 06/2011 SFH REVISED
0 10/2004 SFH FIRST ISSUE
DOA CIVIL STANDARD DETAILS
Slope Drain Detail
STD-01-503
DRAWN BY STAFF
DESIGNED BY STAFF
CHECKED BY STAFF
APPROVED BY STAFF
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS

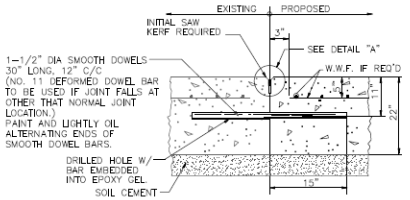

PAVED DRAINAGE PATH PLAN VIEW
N.T.S.
EXISTING INFIELD INLET
35' EXISTING SHOULDER
35'
EDGE OF ASPLALT SHOULDER
PROPOSED PAVED DRAINAGE PATH
SURVEYED LOW POINT IN SHOULDER
EDGE STRIPING
℄ TAXIWAY
PAVED DRAINAGE PATH DETAIL
N.T.S.
4" THICK MISC. CONCRETE, 3000 psi
2.0'
℄ PATH
2.0'
2" CLEAR
6X6 D2.9/D2.9 WELDED WIRE REINFORCEMENT
SLOPE ¼" PER FT. TYP.
PROPOSED GROUND
EXISTING GROUND
NOTE: 1. DRAINAGE PATH MUST BE LOCATED AT SURVEYED LOW POINT IN ASPHALT SHOULDER.
2. JOINTING PATTERN: SCORE JOINT ALONG THE DRAINAGE PATH CENTERLINE AND SCORE TRANSVERSE JOINTS EVERY 4 FEET.
TYPICAL DRAINAGE PATH PROFILE AT RUNWAY GRADING SECTION
N.T.S.
FOR USE IN RELIEVING PONDING DUE TO TURF BUILD UP ON SHOULDER LOW POINTS
EXISTING INLET
% VARIES *
EXISTING ASPHALT SHOULDER
SHOULDER
% VARIES
250' FROM RUNWAY CL TO SAFETY AREA EDGE
* FIRST 10 FEET OF SAFETY AREA GRADE VARIES UP TO 5%. BEYOND 10 FEET SAFETY AREA VARIES 1.5% TO 3%
35'
1.50%
50'
1.00%
25'
℄ RUNWAY
TYPICAL DRAINAGE PATH PROFILE AT TAXIWAY GRADING SECTION
N.T.S.
EXISTING INLET
PROP. CONC. FLUME
% VARIES *
EXISTING ASPHALT SHOULDER
SHOULDER
% VARIES
107' FROM TAXIWAY CL TO SAFETY AREA EDGE
35'
VARIABLE 37.5' MIN
1.5%
* FIRST 10 FEET OF SAFETY AREA GRADE VARIES UP TO 5%. BEYOND 10 FEET SAFETY AREA VARIES 1.5% TO 3%
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
NO. DATE BY REVISION
0 RFM FIRST ISSUE
1 RFM REVISED
DOA CIVIL STANDARD DETAILS
Paved Drainage Path Detail
STANDARD SHEET NUMBER
STD-01-504
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
DATE:
SCALE:
SHEET NO.
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS


UNIFORM PLANE
DUMMY GROOVED JOINTS
3'-0" (TYP.)
3'-0" (TYP.)
A
A
CONC. APRON 4" THICK W/ #6 x 6-6" x 6" WELDED WIRE FABRIC
PLAN
3"
3'-0"
#6/6-6" x 6"
4
1
6"
4"
2-#4's CONTINUOUS
6"
8"
SECTION A-A
NOTES:
1. CONCRETE TO MEET SPECIFICATIONS OF SECTION D-751. PAYMENT WILL BE UNDER "MISCELLANEOUS CONCRETE".
TYPICAL CONCRETE APRON DETAIL FOR INLETS
N.T.S.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
1 08/2019 RFM REVISED
0 10/20/2014 RFM FIRST ISSUE
NO. DATE BY REVISION
DOA CIVIL STANDARD DETAILS
Miscellaneous Drainage Details
STANDARD SHEET NUMBER
STD-01-505
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
DATE:
SCALE:
SHEET NO.
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS

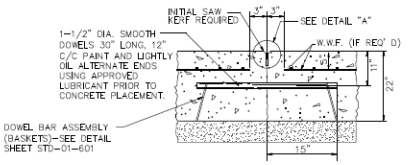

SMOOTH DOWELED LONGITUDINAL CONSTRUCTION JOINT
SMOOTH DOWELED TRANSVERSE CONTRACTION JOINT
DEFORMED DOWELED LONGITUDINAL CONSTRUCTION JOINT
DEFORMED DOWELED TRANSVERSE CONTRACTION JOINT
LONGITUDINAL OR TRANSVERSE JOINT SEAL DETAIL "A"
EXPANSION JOINT SEAL DETAIL "B"
SKEWED DOWEL INSTALLATION
THICKENED EDGE EXPANSION JOINT
TYPICAL DOWEL BAR BASKET
DETAIL FOR DOWEL SPACING AT JOINT CORNERS
CONTRACTION / CONSTRUCTION JOINT CORE DETAIL
EXPANSION JOINT CORE DETAIL
GENERAL NOTES
DOWEL AND TIE BAR HOLE DRILLING AND INSTALLATION NOTES
DOWEL BAR BASKET NOTES
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
Pavement Joint Details - New Projects
STD-01-600
NOT RELEASED FOR CONSTRUCTION



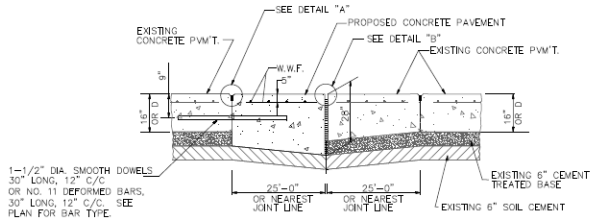
LONGITUDINAL CONSTRUCTION JOINT
N.T.S.



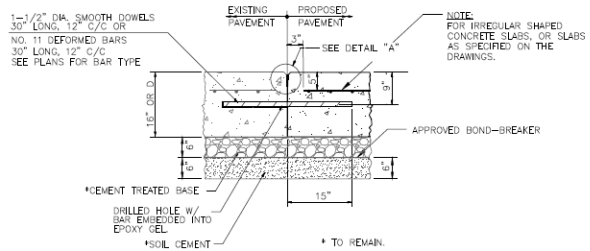
TRANSVERSE CONSTRUCTION JOINT
N.T.S.



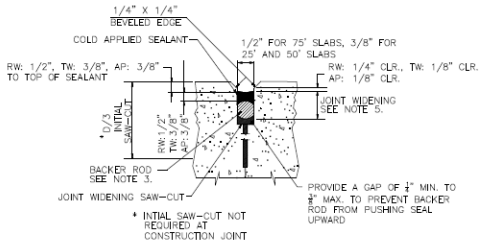
TRANSVERSE CONTRACTION JOINT
N.T.S.



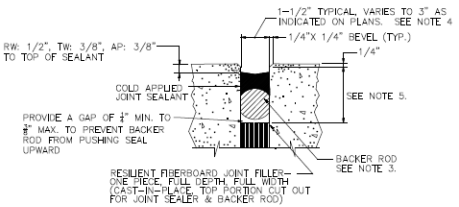
THICKENED EDGE EXPANSION JOINT
N.T.S.



LONGITUDINAL OR TRANSVERSE JOINT AT EXISTING 16-INCH PAVEMENT
N.T.S.



DETAIL "A" LONGITUDINAL AND TRANSVERSE JOINT SEAL DETAIL
N.T.S.



EXPANSION JOINT SEAL DETAIL
DETAIL "B"
N.T.S.

NOTES FOR DOWEL AND TIE BAR HOLE DRILLING AND INSTALLATION:

A. DRILLING AND INSTALLATION METHOD SHALL BE CAPABLE OF MAINTAINING DRILL HOLES AND EMBEDDED BARS: (A) PARALLEL TO THE CONCRETE SURFACE, AND (B) NORMAL TO THE JOINT LINE, WITHIN 1/4" AT THE END OF THE DOWEL OR TIE BAR EXCEPT WHERE SPECIFIED OTHERWISE. DRILL HOLES SHALL BE ACCURATELY LAID OUT SO THAT THE MAXIMUM DEVIATION DOES NOT EXCEED 1". DRILL HOLE DIAMETER TO BE APPROXIMATELY 1/8" CLEAR OF BAR ALL AROUND.

B. AFTER THE DRILLING IS COMPLETE AND PRIOR TO INSTALLATION OF THE DOWEL OR TIE BARS, THE HOLES SHALL BE THOROUGHLY CLEANED TO REMOVE DRILLING DUST, CONCRETE CHIPS, AND ANY MATERIAL DETRIMENTAL TO BONDING.

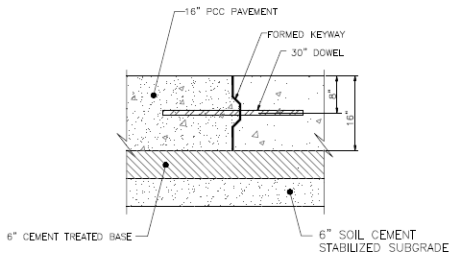
C. EPOXY GEL SHALL BE APPLIED TO THE DOWEL AND SUFFICIENT GEL INJECTED IN THE BACK OF THE TIE BAR HOLE BY A MECHANICAL MIXING/PUMP DEVICE, SO THAT A SLIGHT AMOUNT OF GEL WILL BE FORCED OUT WHEN THE DOWEL OR TIE BAR IS INSERTED AND TAPPED TO THE CORRECT POSITION. IT WILL BE NECESSARY TO TWIST THE BAR BACK AND FORTH SEVERAL TIMES TO ELIMINATE THE AIR ENTRAPPED IN THE HOLE. SMALL WEDGES MAY BE USED TO SUPPORT THE DOWEL OR TIE BAR IN CORRECT ALIGNMENT UNTIL THE GEL HARDENS.

D. EPOXY SHALL MEET THE GEORGIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION, SECTION 886 FOR TYPE VIII EPOXY GEL.

E. DAMAGED CEMENT TREATED BASE SHALL BE REPAIRED OR REPLACED WITH LOW SLUMP LOW STRENGTH CONCRETE.

NOTES:

1. LONGITUDINAL AND TRANSVERSE JOINTS SHALL BE SAWED AS INDICATED.
2. TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED ONLY WHEN APPROVED BY THE ENGINEER.
3. FOR ALL JOINTS THE BACKER ROD MATERIAL SHALL BE COMPATIBLE WITH THE COLD POURED SEALANT AND SLIGHTLY OVERSIZED TO PREVENT MOVEMENT DURING THE JOINT SEALANT OPERATION.
4. THE WIDTH OF THE JOINTS SHALL BE CORRECTED FOR 68° F.
5. JOINT CONFIGURATION SHALL MEET JOINT SEAL MANUFACTURER'S SPECIFICATIONS, EXCEPT AS NOTED ON PLANS AND IN SPECIFICATIONS.
6. WELDED WIRE REINFORCING SHALL BE 6X6 D6/D6. ALL REINFORCING STEEL SHALL BE DELIVERED IN FLAT SHEETS. NO ROLL STOCK WILL BE ACCEPTABLE.



EXISTING APRON SECTION
CPTC, NORTH AND SOUTH CARGO
N.T.S.

CITY OF ATLANTA, GEORGIA

Hartsfield-Jackson Atlanta International Airport

DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT

NO.	DATE	BY	REVISION
1	08/2019	RFM	REVISED
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DOA CIVIL STANDARD DETAILS

Pavement Joint Details - Replacement Projects-1

WBS NUMBER: -	DRAWN BY: STAFF
FC NUMBER: -	DESIGNED BY: STAFF
CONSULTANT PROJECT NUMBER: -	CHECKED BY: STAFF
STANDARD SHEET NUMBER: STD-01-700	APPROVED BY: STAFF
	DATE: -
	SCALE:
	SHEET NO: -

DOA CIVIL STANDARD DETAILS

NOT RELEASED FOR CONSTRUCTION

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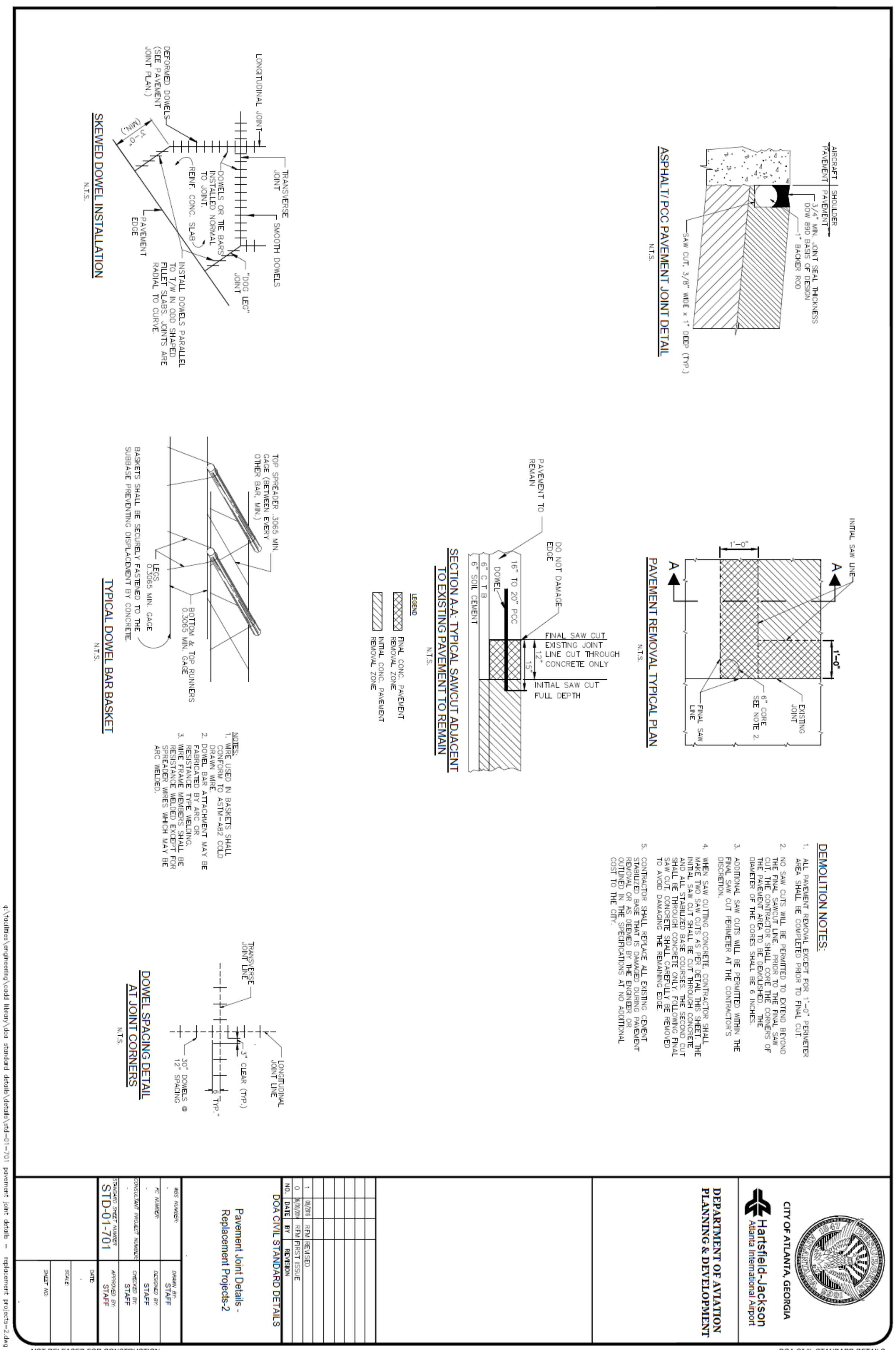
AIRCRAFT PAVEMENT
SHOULDER PAVEMENT
3/4" MIN. JOINT SEAL THICKNESS DOW 890 BASIS OF DESIGN
1" BACKER ROD
SAW CUT, 3/8" WIDE x 1" DEEP (TYP.)
ASPHALT/ PCC PAVEMENT JOINT DETAIL
N.T.S.
INITIAL SAW LINE
1'-0"
EXISTING JOINT
6" CORE SEE NOTE 2.
FINAL SAW LINE
PAVEMENT REMOVAL TYPICAL PLAN
N.T.S.
DEMOLITION NOTES:
1. ALL PAVEMENT REMOVAL EXCEPT FOR 1'-0" PERIMETER AREA SHALL BE COMPLETED PRIOR TO FINAL CUT.
2. NO SAW CUTS WILL BE PERMITTED TO EXTEND BEYOND THE FINAL SAWCUT LINE. PRIOR TO THE FINAL SAW CUT, THE CONTRACTOR SHALL CORE THE CORNERS OF THE PAVEMENT AREA TO BE DEMOLISHED. THE DIAMETER OF THE CORES SHALL BE 6 INCHES.
3. ADDITIONAL SAW CUTS WILL BE PERMITTED WITHIN THE FINAL SAW CUT PERIMETER AT THE CONTRACTOR'S DISCRETION.
4. WHEN SAW CUTTING CONCRETE, CONTRACTOR SHALL MAKE TWO SAW CUTS AS PER DETAIL THIS SHEET. THE INITIAL SAW CUT SHALL BE CUT THROUGH CONCRETE AND ALL STABILIZED BASE COURSES. THE SECOND CUT SHALL BE THROUGH CONCRETE ONLY. FOLLOWING FINAL SAW CUT, CONCRETE SHALL CAREFULLY BE REMOVED TO AVOID DAMAGING THE REMAINING EDGE.
5. CONTRACTOR SHALL REPLACE ALL EXISTING CEMENT STABILIZED BASE THAT IS DAMAGED DURING PAVEMENT REMOVAL OR AS DEEMED BY THE ENGINEER OR OUTLINED IN THE SPECIFICATIONS AT NO ADDITIONAL COST TO THE CITY.
PAVEMENT TO REMAIN
DO NOT DAMAGE EDGE
FINAL SAW CUT EXISTING JOINT LINE CUT THROUGH CONCRETE ONLY
INITIAL SAW CUT FULL DEPTH
12"
15"
16" TO 20" PCC
DOWEL
6" C T B
6" SOIL CEMENT
SECTION A-A: TYPICAL SAWCUT ADJACENT TO EXISTING PAVEMENT TO REMAIN
N.T.S.
LEGEND
FINAL CONC. PAVEMENT REMOVAL ZONE
INITIAL CONC. PAVEMENT REMOVAL ZONE
LONGITUDINAL JOINT
TRANSVERSE JOINT
SMOOTH DOWELS
"DOG LEG" JOINT
DOWELS OR TIE BARS INSTALLED NORMAL TO JOINT.
REINF. CONC. SLAB
INSTALL DOWELS PARALLEL TO T/W IN ODD SHAPED FILLET SLABS. JOINTS ARE RADIAL TO CURVE.
DEFORMED DOWELS (SEE PAVEMENT JOINT PLAN.)
3'-0" (MIN.)
PAVEMENT EDGE
SKEWED DOWEL INSTALLATION
N.T.S.
TOP SPREADER .3065 MIN. GAGE (BETWEEN EVERY OTHER BAR, MIN.)
BOTTOM & TOP RUNNERS 0.3065 MIN. GAGE
LEGS 0.3065 MIN. GAGE
BASKETS SHALL BE SECURELY FASTENED TO THE SUBBASE PREVENTING DISPLACEMENT BY CONCRETE.
TYPICAL DOWEL BAR BASKET
N.T.S.
NOTES:
1. WIRE USED IN BASKETS SHALL CONFORM TO ASTM-A82 COLD DRAWN WIRE.
2. DOWEL BAR ATTACHMENT MAY BE FABRICATED BY ARC OR RESISTANCE TYPE WELDING.
3. WIRE FRAME MEMBERS SHALL BE RESISTANCE WELDED EXCEPT FOR SPREADER WIRES WHICH MAY BE ARC WELDED.
LONGITUDINAL JOINT LINE
TRANSVERSE JOINT LINE
3" CLEAR (TYP.)
6" TYP.
30" DOWELS @ 12" SPACING
DOWEL SPACING DETAIL AT JOINT CORNERS
N.T.S.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
1 08/2019 RFM REVISED
0 XX/XX/XXXX RFM FIRST ISSUE
NO. DATE BY REVISION
DOA CIVIL STANDARD DETAILS
Pavement Joint Details - Replacement Projects-2
WBS NUMBER:
FC NUMBER:
CONSULTANT PROJECT NUMBER:
STANDARD SHEET NUMBER
STD-01-701
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
DATE:
SCALE:
SHEET NO:
DOA CIVIL STANDARD DETAILS
NOT RELEASED FOR CONSTRUCTION
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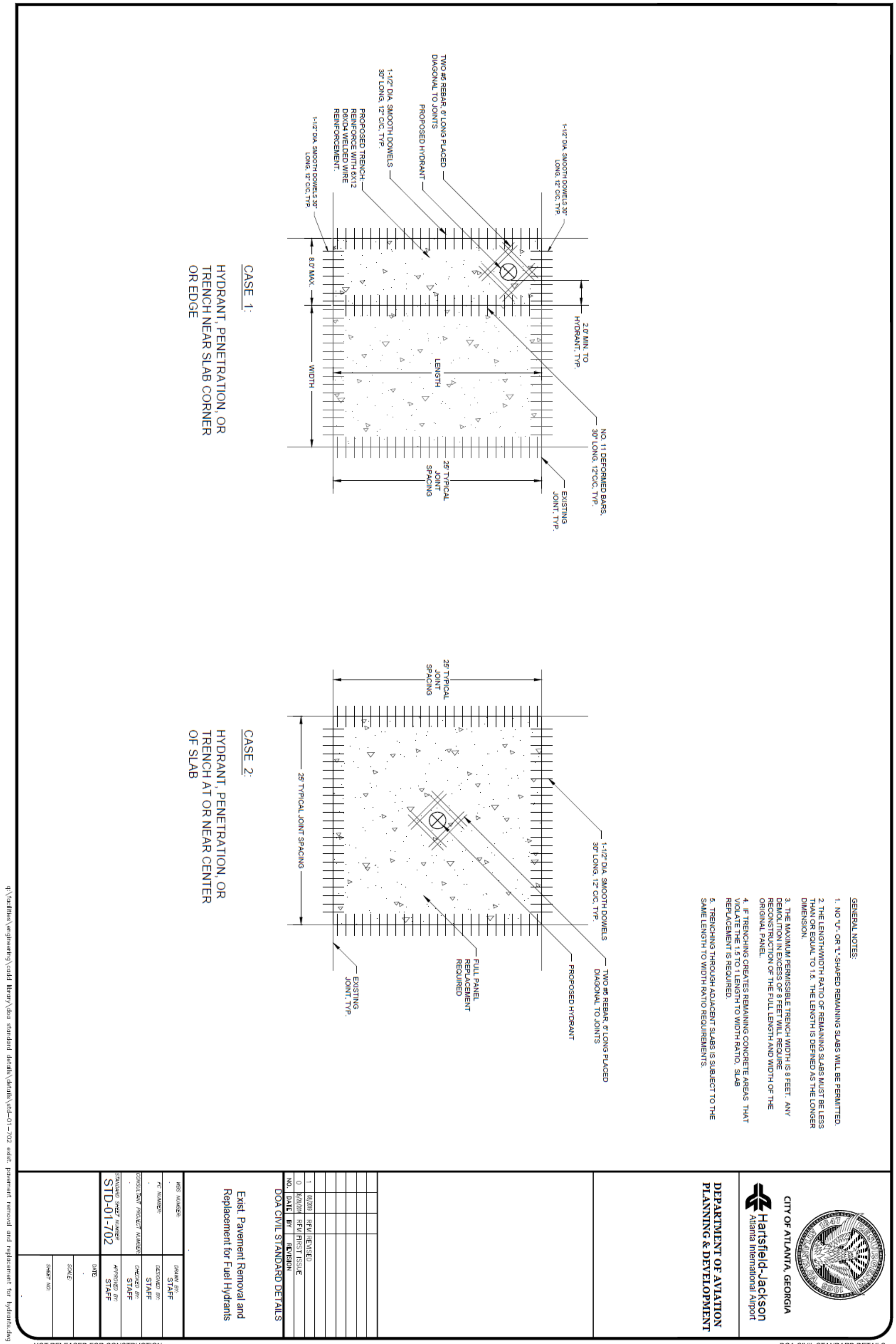
CASE 1:
HYDRANT, PENETRATION, OR TRENCH NEAR SLAB CORNER OR EDGE
1-1/2" DIA. SMOOTH DOWELS 30" LONG, 12" C/C, TYP.
TWO #5 REBAR, 6' LONG PLACED DIAGONAL TO JOINTS
PROPOSED HYDRANT
1-1/2" DIA. SMOOTH DOWELS 30" LONG, 12" C/C, TYP.
PROPOSED TRENCH. REINFORCE WITH 6X12 D8XD4 WELDED WIRE REINFORCEMENT.
1-1/2" DIA. SMOOTH DOWELS 30" LONG, 12" C/C, TYP.
8.0' MAX.
2.0' MIN. TO HYDRANT, TYP.
LENGTH
WIDTH
NO. 11 DEFORMED BARS, 30" LONG, 12" C/C, TYP.
25' TYPICAL JOINT SPACING
EXISTING JOINT, TYP.
CASE 2:
HYDRANT, PENETRATION, OR TRENCH AT OR NEAR CENTER OF SLAB
25' TYPICAL JOINT SPACING
25' TYPICAL JOINT SPACING
1-1/2" DIA. SMOOTH DOWELS 30" LONG, 12" C/C, TYP.
TWO #5 REBAR, 6' LONG PLACED DIAGONAL TO JOINTS
PROPOSED HYDRANT
FULL PANEL REPLACEMENT REQUIRED
EXISTING JOINT, TYP.
GENERAL NOTES:
1. NO "U"- OR "L"-SHAPED REMAINING SLABS WILL BE PERMITTED.
2. THE LENGTH-WIDTH RATIO OF REMAINING SLABS MUST BE LESS THAN OR EQUAL TO 1.5. THE LENGTH IS DEFINED AS THE LONGER DIMENSION.
3. THE MAXIMUM PERMISSIBLE TRENCH WIDTH IS 8 FEET. ANY DEMOLITION IN EXCESS OF 8 FEET WILL REQUIRE RECONSTRUCTION OF THE FULL LENGTH AND WIDTH OF THE ORIGINAL PANEL.
4. IF TRENCHING CREATES REMAINING CONCRETE AREAS THAT VIOLATE THE 1.5 TO 1 LENGTH TO WIDTH RATIO, SLAB REPLACEMENT IS REQUIRED.
5. TRENCHING THROUGH ADJACENT SLABS IS SUBJECT TO THE SAME LENGTH TO WIDTH RATIO REQUIREMENTS.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
1 08/2019 RFM REVISED
0 10/20/2014 RFM FIRST ISSUE
NO. DATE BY REVISION
DOA CIVIL STANDARD DETAILS
Exist. Pavement Removal and Replacement for Fuel Hydrants
STANDARD SHEET NUMBER
STD-01-702
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
DATE:
SCALE:
SHEET NO.
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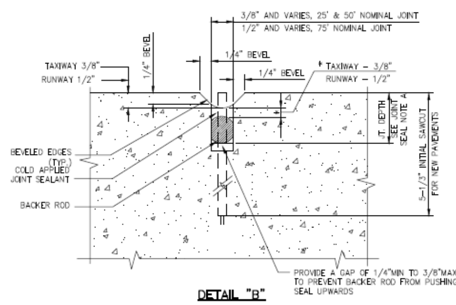
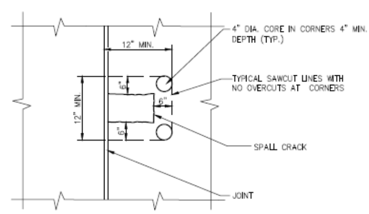
DOA CIVIL STANDARD DETAILS



DETAIL "B"

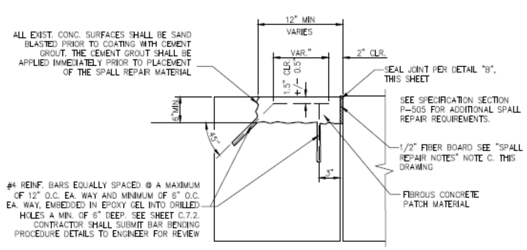
LONGITUDINAL AND TRANSVERSE JOINT SEAL

SCALE: NTS



TYPICAL REMOVAL PLAN FOR SPALL REPAIR

SCALE: NTS



TYPICAL SPALL REPAIR DETAIL

SCALE: NTS

JOINT SEAL PROCEDURE NOTES

IN GENERAL, THE PROCEDURE FOR RESEALING THE JOINT SHALL BE AS FOLLOWS: (ADDITIONAL REQUIREMENTS AND STEPS FOR RESEALING THE EXPANSION JOINTS ARE GIVEN IN SUBSEQUENT SECTIONS OF THE PLANS AND SPECIFICATIONS.)

A. THE CONTRACTOR SHALL REMOVE THE EXISTING SEALS, THE EXISTING JOINT SEAL AND SEALANT MUST BE REMOVED ENTIRELY TO ULTIMATELY PROVIDE A THOROUGHLY CLEANED SURFACE ON WHICH TO RESEAL. THE EXISTING SEAL IS TO BE REMOVED BY SAWCUTTING BOTH SIDES OF THE PAVEMENT EDGE TO WHICH THE SEAL IS ATTACHED TO THE FULL DEPTH OF THE SEAL AND APPROXIMATELY 1/16" INTO EACH PAVEMENT EDGE.

B. ALL SPALLED AND CRACKED SURFACES ADJACENT TO A JOINT WHICH ARE DEEMED UNSATISFACTORY FOR RESEALING BY THE ENGINEER SHALL BE REPAIRED BY THE CONTRACTOR PRIOR TO RESEALING. THE PATCH MATERIAL USED FOR SPALLING REPAIR SHALL BE AS SPECIFIED IN SPECIFICATIONS SECTION P-505, CONCRETE PAVEMENT SPALL REPAIR.

C. PAVEMENT JOINT EDGES ARE TO BE SAWCUT BEVELED ON A 1/4" X 1/4" SLOPE, AS SHOWN IN DETAIL B. NOTE, THE CONTRACTOR SHALL BE REQUIRED TO DEVELOP A MEANS TO CONTAIN THE SLURRY PRODUCED DURING THE BEVELING OPERATIONS. IMMEDIATELY FOLLOWING THE BEVELING THE JOINT OPENING IS TO BE CLEANED BY THE USE OF HIGH PRESSURE WATER BLASTING. THE AREA SHALL THEN BE SWEPT CLEAN BY USE OF A VACUUM SWEEPER. THE BEVELING AND SLURRY CLEANUP OPERATIONS IN CONJUNCTION WITH THE SEAL REMOVAL SHALL CONSTITUTE THE INITIAL CLEANING.

D. IMMEDIATELY PRECEDING APPLICATION OF THE JOINT SEAL, THE PAVEMENT EDGE WHICH WILL RECEIVE THE NEW JOINT MATERIAL SHALL BE THOROUGHLY CLEANED AND SAND BLASTED. THE CONTRACTOR SHALL BE REQUIRED TO ESTABLISH A MEANS TO CONTAIN THE SAND DURING THE SAND BLASTING OPERATION SINCE SAND OR ANY FOREIGN OBJECT ON AIRCRAFT PAVEMENT IS DETRIMENTAL TO AIRCRAFT SAFETY. THE METHODS ESTABLISHED TO CONTAIN THE SAND MUST BE APPROVED BY THE ENGINEER PRIOR TO ITS USE UPON COMPLETION OF THE SAND BLASTING OPERATION OR AT INTERVALS DIRECTED BY THE ENGINEER, PRIOR TO ITS USE. THE CONTRACTOR SHALL BE REQUIRED TO SWEEP THE SAND WITH A VACUUM SWEEPER.

E. BACKER ROD AS SPECIFIED IN THE SPECIFICATIONS SHALL BE INSTALLED AS CALLED FOR IN DETAIL B. THE INSTALLATION OF THE BACKER ROD IN CONJUNCTION WITH THE SANDBLASTING OPERATION SHALL CONSTITUTE THE FINAL JOINT PREPARATION.

F. THE JOINT SEAL AS CALLED FOR IN THE SPECIFICATIONS SHALL THEN BE APPLIED; SEE DETAIL B. AS A PRECAUTION TO ENSURE THAT PAVEMENT IS MOISTURE FREE, THE CONTRACTOR SHALL HAVE AT HIS DISPOSAL ON SITE, PRIOR TO THE ACTUAL SEALING OPERATION, A NONRESIDUAL HEATER/BLOWER UNIT PER SEALING CREW, TO DRY THE PAVEMENT EDGES.

JOINT SEAL NOTES:

A. THE JOINT SEAL MANUFACTURER'S SPECIFICATIONS SHALL BE COMPATIBLE WITH JOINT CONFIGURATION.

B. FOR ALL JOINTS THE BACKER ROD MATERIAL SHALL BE COMPATIBLE WITH THE COLD POURED SEALANT AND SLIGHTLY OVERSIZED TO PREVENT MOVEMENT DURING THE JOINT SEALANT OPERATION.

C. SEE DRAWING C.7.3 FOR EXPANSION JOINT SEAL DETAIL. REPLACE EXISTING SEAL AND BACKER ROD. EXISTING EXPANSION BOARD TO REMAIN.

SPALL REPAIR NOTES:

A. SPALL REPAIR LIMITS SHALL BE APPROVED BY ENGINEER PRIOR TO ANY CUTTING OR REMOVAL. MINIMUM SPALL AREA IS ONE SQUARE FOOT. REPAIR DEPTH MAY VARY BEYOND 6 INCHES. EXISTING SPALLED CONCRETE SHALL BE REMOVED TO SOUND CONCRETE. WITH ENGINEER'S APPROVAL, PRE-SAWING MAY BE PERMITTED AS FOLLOWS:

1. TAXIWAYS MAY BE PRESAWED 48 HOURS IN ADVANCE OF SPALL REPAIR CONSTRUCTION.
2. RUNWAYS MAY BE PRESAWED 24 HOURS IN ADVANCE OF SPALL REPAIR CONSTRUCTION.

B. JOINT SEAL INSTALLATION AROUND SPALL REPAIRS SHALL BE ACCOMPLISHED IMMEDIATELY AFTER SPALL REPAIRS ARE COMPLETED AND CURED.

C. FIBER BOARD USED FOR SPALL PATCH IS FOR FORMING PURPOSES. THE TOP PORTION SHALL BE REMOVED PRIOR TO JOINT REPAIR SEAL INSTALLATION.

D. SPALL REPAIRS ALONG UTILITY CUTS CAN BE LESS THAN 12" WIDE.

E. SPALL REPAIR WORK WILL BE SCHEDULED NOT ONLY TO OBTAIN THE 450 PSI STRENGTH REQUIRED FOR OPENING TO AIRCRAFT TRAFFIC BUT ALSO TO PROVIDE SUFFICIENT TIME TO WATER CURE THE FIBROUS CONCRETE MIX AS REQUIRED BY THE TECHNICAL SPECIFICATIONS.

F. ELECTRICAL CONTRACTOR SHALL BE ON SITE DURING SAW CUTTING, REMOVAL, AND REPLACEMENT OF CONCRETE SPALLS WITHIN 3 FEET OF IN-PAVEMENT ELECTRICAL ITEMS.

G. CONTRACTOR SHALL BE REQUIRED TO COORDINATE WITH DOA MAINTENANCE TO LOCK OUT AFFECTED ELECTRICAL CIRCUITS AND RE-ENERGIZE CIRCUITS.

H. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

CRACK ROUTING AND SEALING

A. PREPARATION FOR CONCRETE PAVEMENT CRACK ROUTING AND SEALING SHALL BE BY PROPERLY ROUTING THE CRACK TO BE SLIGHTLY LOWER THAN THE EXISTING CRACK TO ENSURE PROPER ADHESION TO THE SIDEWALLS. THE CRACKS SHOULD BE ROUTED OUT TO PROVIDE A MINIMUM SEALANT RESERVOIR 3/8" WIDE WITH A MINIMUM DEPTH OF 3/8". THICKNESS AND DEPTH BELOW THE PAVEMENT SURFACE SHALL BE AS SPECIFIED FOR JOINT SEALANT.

B. CRACKS SHOULD BE FREE OF DIRT, DUST, AND MOISTURE, AND SHOULD BE FROST-FREE. WIRE BRUSHING OR COMPRESSED AIR SHOULD CLEAN THEM AND A HEAT LANCE MAY BE USED TO DRY THE SURFACES.

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DOA CIVIL STANDARD DETAILS

Spall and Joint Repair Details

WBS NUMBER: -	DRAWN BY: STAFF
FC NUMBER: -	DESIGNED BY: STAFF
CONSULTANT PROJECT NUMBER: -	CHECKED BY: STAFF
STANDARD SHEET NUMBER: STD-01-703	APPROVED BY: STAFF
	DATE: -
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	SHEET NO: -

DOA CIVIL STANDARD DETAILS

NOT RELEASED FOR CONSTRUCTION

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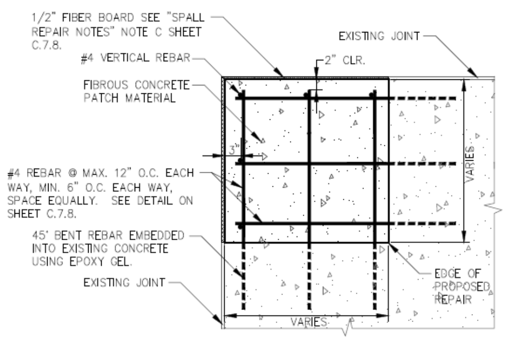
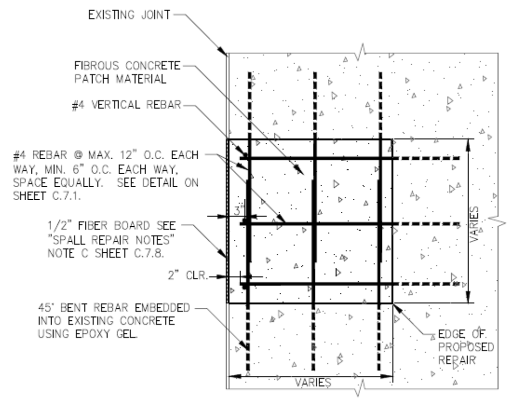
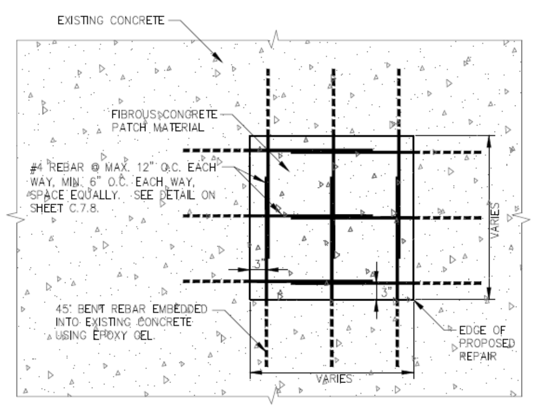


SPALL ADJACENT TO 2 JOINTS
SCALE: NTS



SPALL ADJACENT TO SINGLE JOINT
SCALE: NTS



SPALL NOT ADJACENT TO JOINT
SCALE: NTS

NOTES:

VERTICAL #4 REINFORCING BARS
- PLACE BARS 3 INCHES FROM JOINTS
- SPACE EQUALLY, MAX. SPACING IS 12 INCHES, MIN. SPACING IS 6 INCHES.
- USE VERTICAL BARS ONLY ALONG JOINTS.

45° BENT #4 REINFORCING BARS
- ON PERIPHERY, PLACE BARS 3 INCHES FROM EDGES OF REPAIR. IF VERTICAL BARS ARE PRESENT, PLACE IMMEDIATELY INSIDE VERTICAL BARS.
- SPACE EQUALLY, MAX. SPACING IS 12 INCHES, MIN. SPACING IS 6 INCHES.

GENERAL
- SPLICES ARE 30 BAR DIAMETERS.
- IF SPALL IS NOT IMMEDIATELY ADJACENT TO A JOINT, BUT IS WITHIN 6 INCHES OF A JOINT, EXTEND REPAIR TO JOINT AND USE VERTICAL BARS.
- SEE SHEET C.7.9 FOR ADDITIONAL DETAILS.

TYPICAL SPALL REPAIR REBAR PLACEMENT DETAILS
SCALE: NTS

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DOA CIVIL STANDARD DETAILS

Typical Spall Repair Rebar Placement Detail

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FC NUMBER: -	DESIGNED BY: STAFF
CONSULTANT PROJECT NUMBER: -	CHECKED BY: STAFF
STANDARD SHEET NUMBER: STD-01-704	APPROVED BY: STAFF
	DATE: -
	SCALE: -
	SHEET NO: -

DOA CIVIL STANDARD DETAILS
NOT RELEASED FOR CONSTRUCTION

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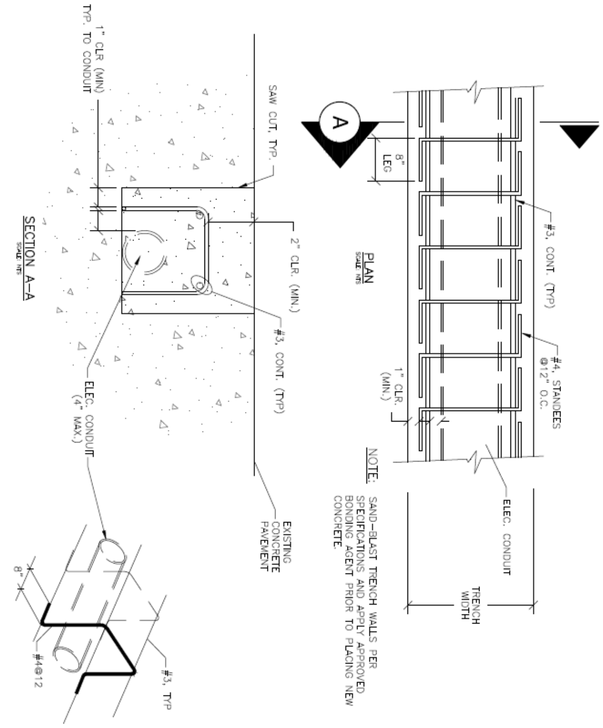

NOTE: TRENCH DEPTH IS 8+/-". CONTRACTOR SHALL FIELD VERIFY ACTUAL TRENCH DEPTH.

GENERAL NOTES

1. ALL REINFORCEMENT TO CONFORM TO ASTM A-615, GRADE 60
2. ALL BAR BENDING DETAILS SHALL CONFORM TO REQ'TS OF ACI 318-05
3. ALL CONCRETE SHALL MEET THE REQUIREMENTS OF SPECIFICATION SECTION P-505.
4. ALL REINFORCEMENT SPLICES SHALL BE CLASS A, PER ACI 318-05
5. ALLOW FOR 5% OF THE TOTAL WEIGHT OF REINFORCING STEEL AS BARS TO BE PLACED AS DIRECTED BY THE ENGINEER.
6. SEE SPALL REPAIR NOTES ON SHEET STD-01-704 FOR ADDITIONAL REQUIREMENTS.
7. STANDEES AND LONGITUDINAL BARS SHALL NOT BE CONTINUOUS THROUGH EXISTING JOINTS. CLIP BARS AS REQUIRED. MAINTAIN 1-INCH CLEARANCE.
8. INSTALL EXPANSION/DEFLECTION FITTINGS ON CONDUITS AT PAVEMENT JOINTS.
9. WHERE TRENCH ENDS AT EXISTING CONCRETE, TIE-IN NEW #3 BARS BY EPOXY GROUTING INTO EXISTING CONCRETE 6". HILTI HIT RE 500 IS THE BASIS OF DESIGN.

TYPICAL REPAIR FOR RETROFIT CONDUIT TRENCH
SCALE: NTS

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Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT

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DOA CIVIL STANDARD DETAILS

Retrofit Conduit Trench Repair Details

WBS NUMBER: -	DRAWN BY: STAFF
FC NUMBER: -	DESIGNED BY: STAFF
CONSULTANT PROJECT NUMBER: -	CHECKED BY: STAFF
STANDARD SHEET NUMBER: STD-01-705	APPROVED BY: STAFF
	DATE: -
	SCALE:
	SHEET NO: -

DOA CIVIL STANDARD DETAILS
NOT RELEASED FOR CONSTRUCTION
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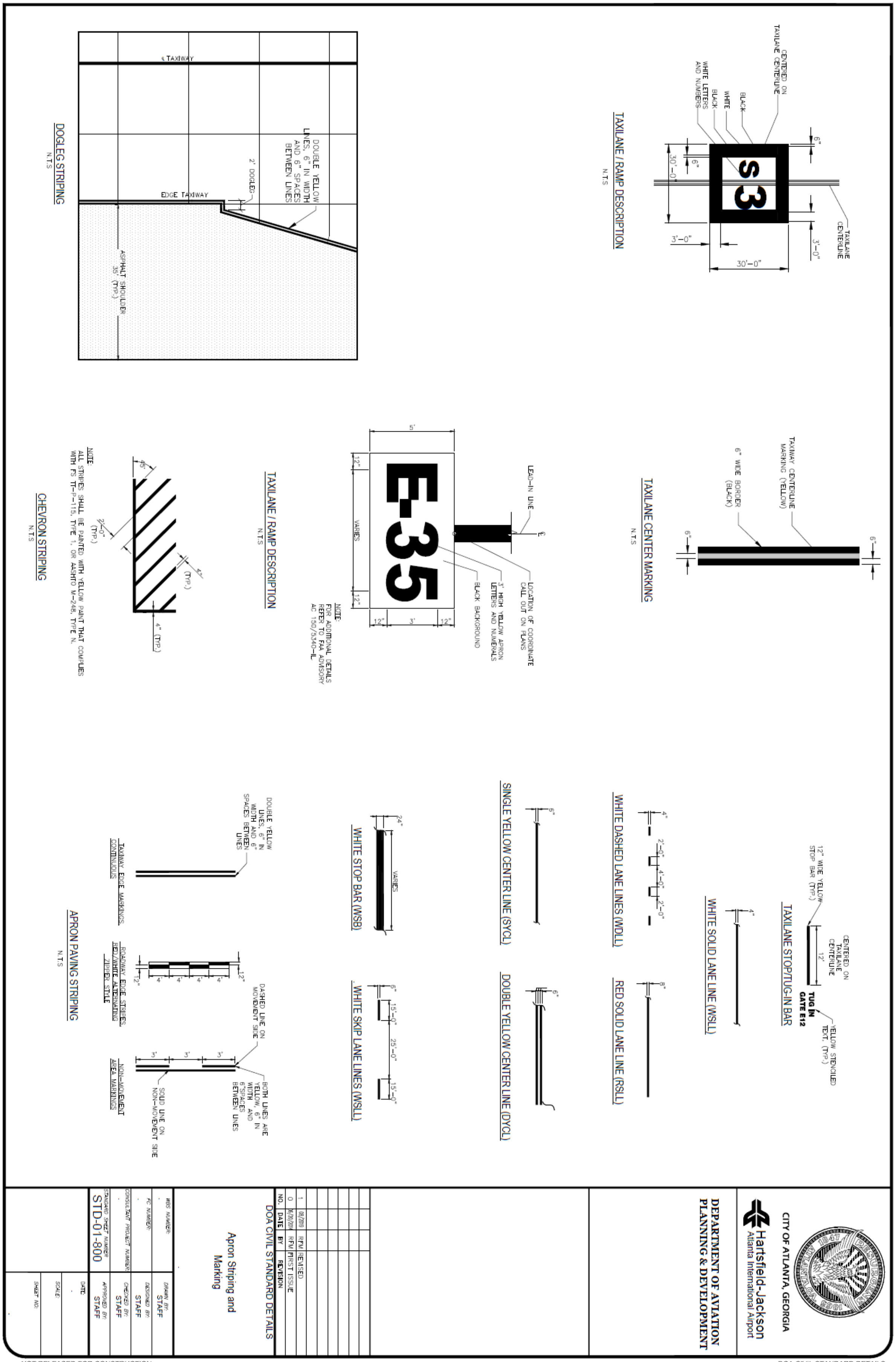
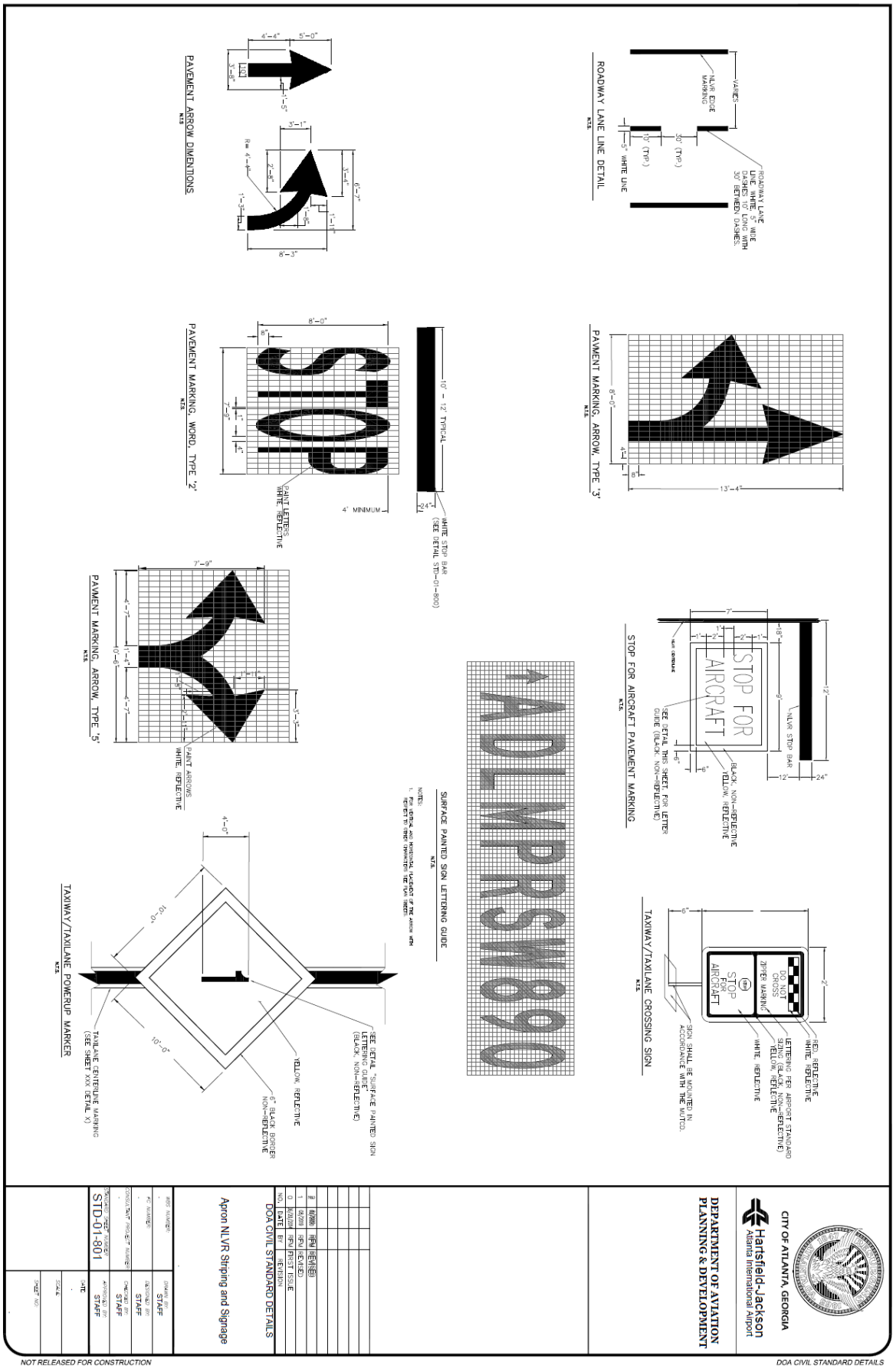
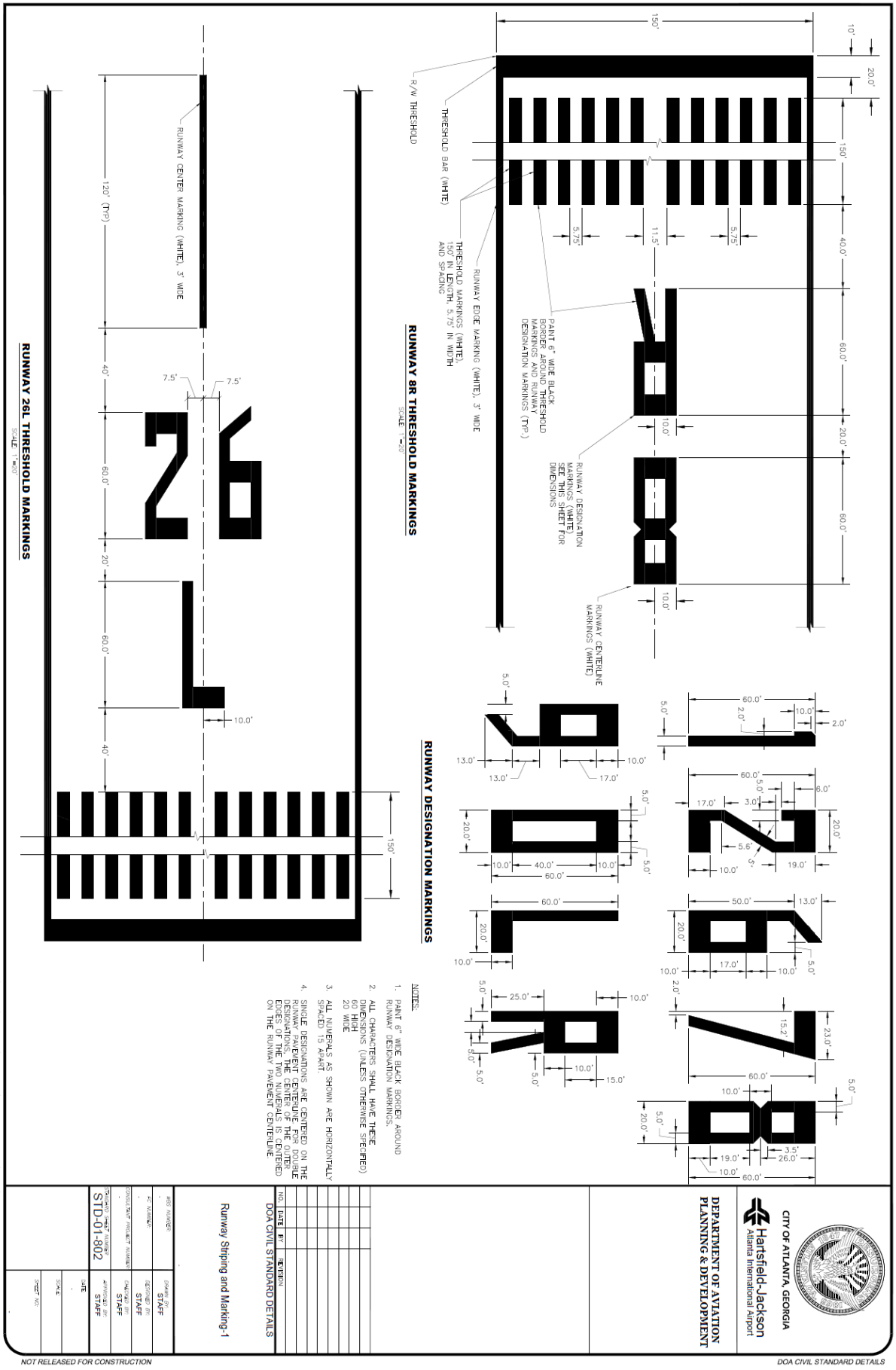
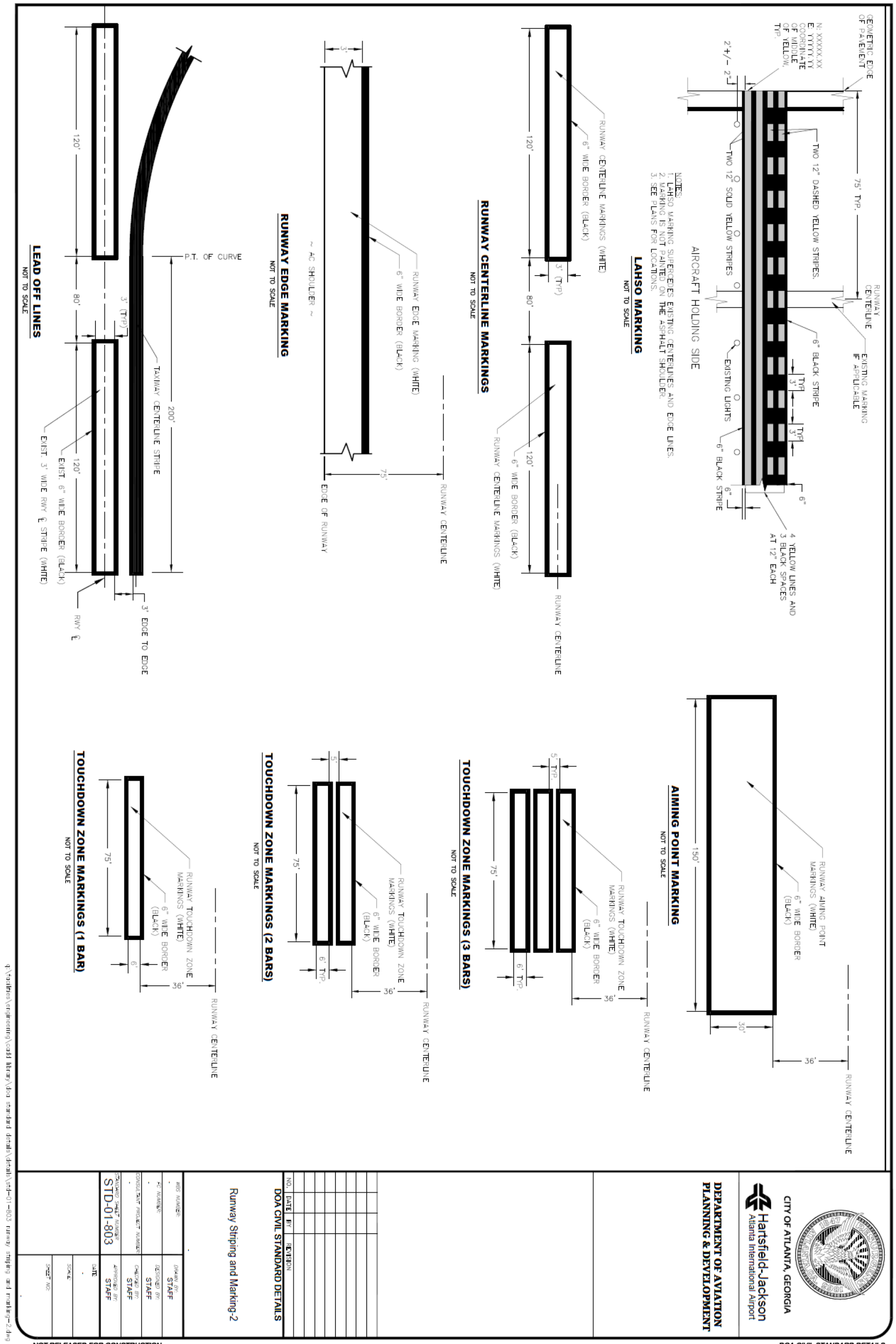
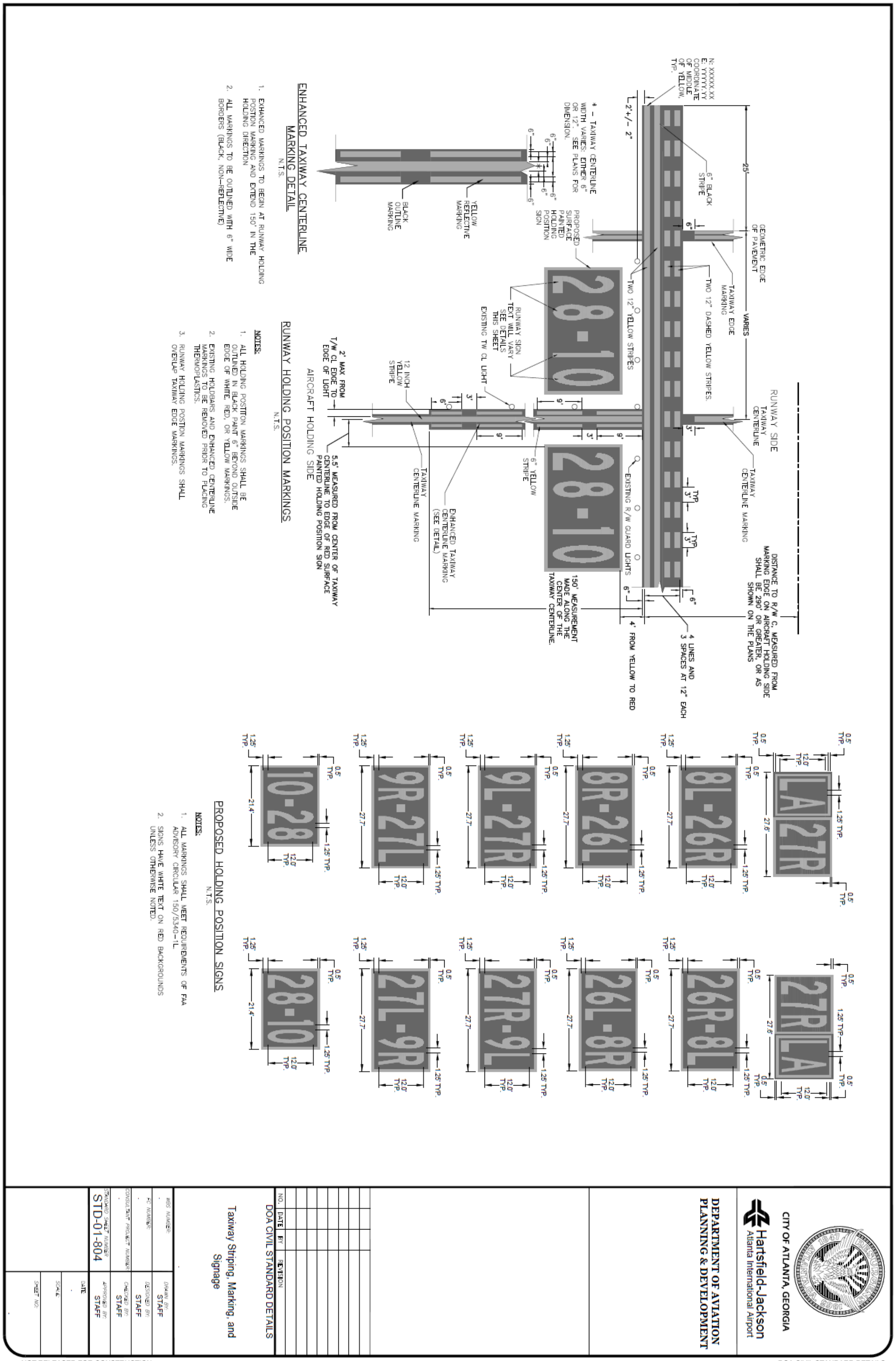
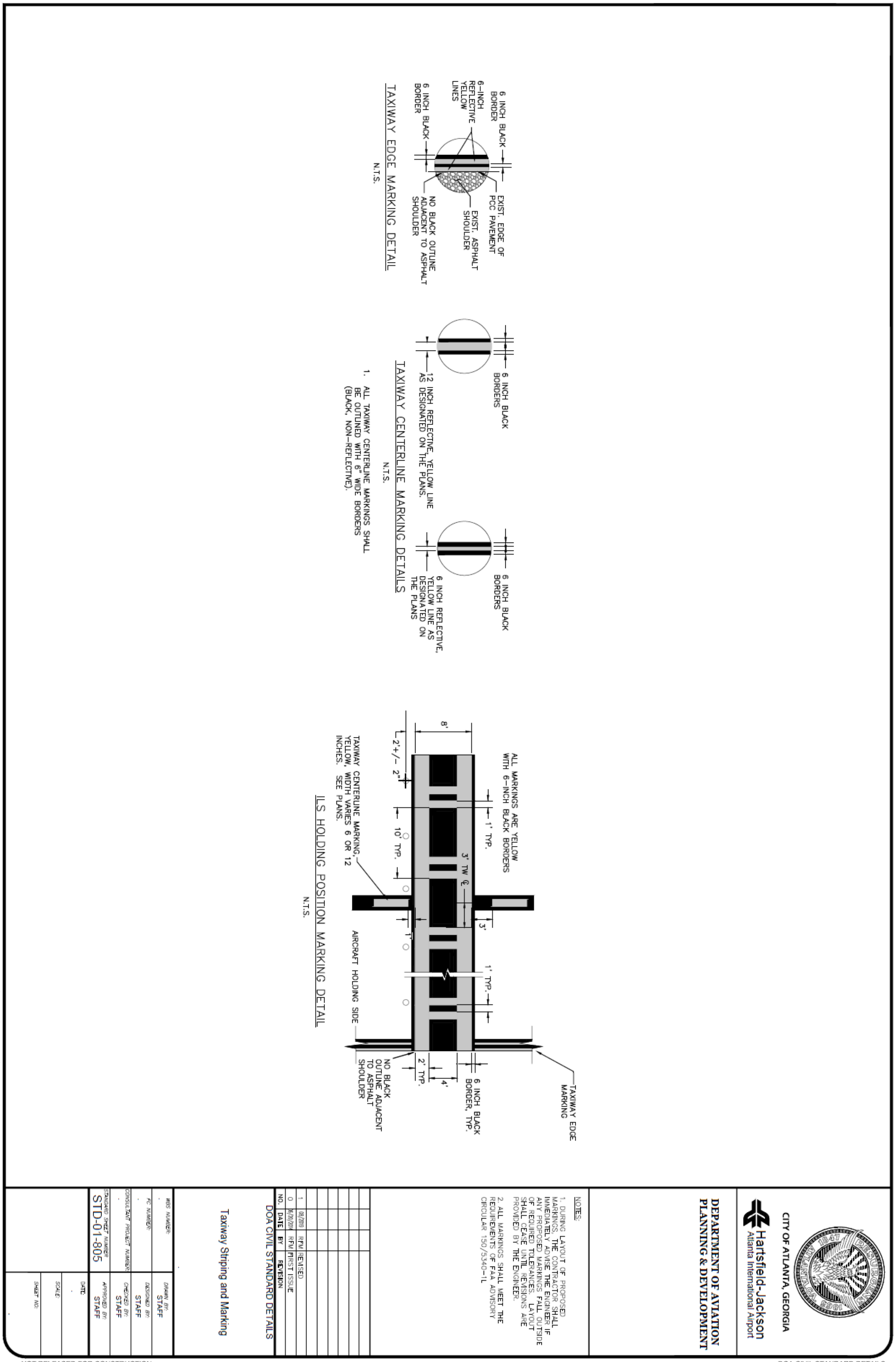

DOGLEG STRIPING
N.T.S
TAXILANE / RAMP DESCRIPTION
N.T.S
CHEVRON STRIPING
N.T.S
TAXILANE / RAMP DESCRIPTION
N.T.S
TAXILANE CENTER MARKING
N.T.S
APRON PAVING STRIPING
N.T.S
WHITE STOP BAR (WSB)
WHITE SKIP LANE LINES (WSLL)
SINGLE YELLOW CENTER LINE (SYCL)
DOUBLE YELLOW CENTER LINE (DYCL)
WHITE DASHED LANE LINES (WDLL)
RED SOLID LANE LINE (RSLL)
WHITE SOLID LANE LINE (WSLL)
TAXILANE STOP/TUG-IN BAR
NOTE:
ALL STRIPES SHALL BE PAINTED WITH YELLOW PAINT THAT COMPLIES WITH FS TT-P-115, TYPE 1, OR AASHTO M-248, TYPE N.
NOTE:
FOR ADDITIONAL DETAILS REFER TO FAA ADVISORY AC 150/5340-1L
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson
Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
Apron Striping and Marking
STD-01-800
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS

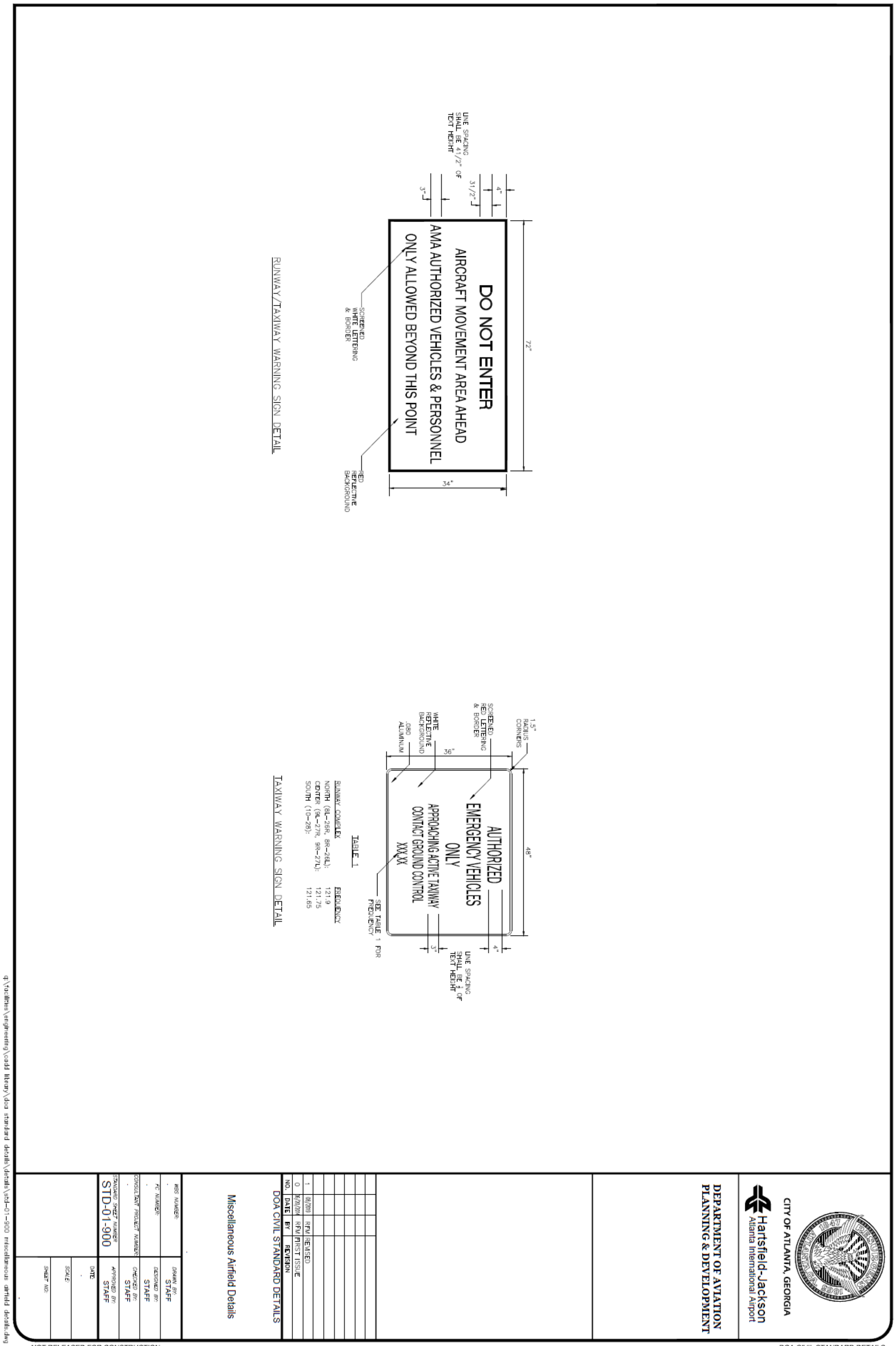

ROADWAY LANE LINE DETAIL
N.T.S.
PAVEMENT ARROW DIMENTIONS
N.T.S.
PAVEMENT MARKING, ARROW, TYPE '3'
N.T.S.
PAVEMENT MARKING, WORD, TYPE '2'
N.T.S.
PAVEMENT MARKING, ARROW, TYPE '5'
N.T.S.
STOP FOR AIRCRAFT PAVEMENT MARKING
N.T.S.
TAXIWAY/TAXILANE CROSSING SIGN
N.T.S.
SURFACE PAINTED SIGN LETTERING GUIDE
N.T.S.
TAXIWAY/TAXILANE POWERUP MARKER
N.T.S.
ADJ RSW 8000
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
Apron NLVR Striping and Signage
STD-01-801
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS


RUNWAY 26L THRESHOLD MARKINGS
RUNWAY CENTER MARKING (WHITE), 3' WIDE
120' (TYP)
40'
60.0'
20'
7.5'
10.0'
RUNWAY 8R THRESHOLD MARKINGS
R/W THRESHOLD
THRESHOLD BAR (WHITE)
THRESHOLD MARKINGS (WHITE), 150' IN LENGTH, 5.75' IN WIDTH AND SPACING
RUNWAY EDGE MARKING (WHITE), 3' WIDE
PAINT 6" WIDE BLACK BORDER AROUND THRESHOLD MARKINGS AND RUNWAY DESIGNATION MARKINGS (TYP.)
RUNWAY DESIGNATION MARKINGS (WHITE) SEE THIS SHEET FOR DIMENSIONS
RUNWAY CENTERLINE MARKINGS (WHITE)
150'
10'
20.0'
40.0'
20.0'
5.75'
11.5'
RUNWAY DESIGNATION MARKINGS
NOTES:
1. PAINT 6" WIDE BLACK BORDER AROUND RUNWAY DESIGNATION MARKINGS.
2. ALL CHARACTERS SHALL HAVE THESE DIMENSIONS (UNLESS OTHERWISE SPECIFIED) 60' HIGH
3. ALL NUMERALS AS SHOWN ARE HORIZONTALLY SPACED 15' APART
4. SINGLE DESIGNATIONS ARE CENTERED ON THE RUNWAY PAVEMENT WIDTH. DOUBLE DESIGNATIONS ARE CENTERED ON THE EDGES OF THE TWO NUMERALS IS CENTERED ON THE RUNWAY PAVEMENT CENTERLINE
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
Runway Striping and Marking-1
STD-01-802
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS


LAHSO MARKING
NOT TO SCALE
NOTES:
1. LAHSO MARKING SUPERCEDES EXISTING CENTERLINES AND EDGE LINES.
2. MARKING IS NOT PAINTED ON THE ASPHALT SHOULDER.
3. SEE PLANS FOR LOCATIONS.
AIRCRAFT HOLDING SIDE
RUNWAY CENTERLINE MARKINGS
NOT TO SCALE
RUNWAY EDGE MARKING
NOT TO SCALE
LEAD OFF LINES
NOT TO SCALE
AIMING POINT MARKING
NOT TO SCALE
TOUCHDOWN ZONE MARKINGS (3 BARS)
NOT TO SCALE
TOUCHDOWN ZONE MARKINGS (2 BARS)
NOT TO SCALE
TOUCHDOWN ZONE MARKINGS (1 BAR)
NOT TO SCALE
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson
Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
Runway Striping and Marking-2
STD-01-803
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS


ENHANCED TAXIWAY CENTERLINE MARKING DETAIL
N.T.S.
1. ENHANCED MARKINGS TO BEGIN AT RUNWAY HOLDING POSITION MARKING AND EXTEND 150' IN THE HOLDING DIRECTION
2. ALL MARKINGS TO BE OUTLINED WITH 6" WIDE BORDERS (BLACK, NON-REFLECTIVE)
RUNWAY HOLDING POSITION MARKINGS
N.T.S.
NOTES:
1. ALL HOLDING POSITION MARKINGS SHALL BE OUTLINED IN BLACK PAINT 6" BEYOND OUTSIDE EDGE OF WHITE, RED, OR YELLOW MARKINGS.
2. EXISTING HOLDBARS AND ENHANCED CENTERLINE MARKINGS TO BE REMOVED PRIOR TO PLACING THERMOPLASTICS.
3. RUNWAY HOLDING POSITION MARKINGS SHALL OVERLAP TAXIWAY EDGE MARKINGS.
RUNWAY SIDE
AIRCRAFT HOLDING SIDE
PROPOSED HOLDING POSITION SIGNS
N.T.S.
NOTES:
1. ALL MARKINGS SHALL MEET REQUIREMENTS OF FAA ADVISORY CIRCULAR 150/5340-1L.
2. SIGNS HAVE WHITE TEXT ON RED BACKGROUNDS UNLESS OTHERWISE NOTED.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
Taxiway Striping, Marking, and Signage
STD-01-804
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS


6 INCH BLACK BORDER
6-INCH REFLECTIVE YELLOW LINES
6 INCH BLACK BORDER
EXIST. EDGE OF PCC PAVEMENT
EXIST. ASPHALT SHOULDER
NO BLACK OUTLINE ADJACENT TO ASPHALT SHOULDER
TAXIWAY EDGE MARKING DETAIL
N.T.S.
6 INCH BLACK BORDERS
12 INCH REFLECTIVE, YELLOW LINE AS DESIGNATED ON THE PLANS.
6 INCH BLACK BORDERS
6 INCH REFLECTIVE, YELLOW LINE AS DESIGNATED ON THE PLANS
TAXIWAY CENTERLINE MARKING DETAILS
N.T.S.
1. ALL TAXIWAY CENTERLINE MARKINGS SHALL BE OUTLINED WITH 6" WIDE BORDERS (BLACK, NON-REFLECTIVE).
ALL MARKINGS ARE YELLOW WITH 6-INCH BLACK BORDERS
8'
2'+/- 2"
1' TYP.
10' TYP.
3' TW ℄
3'
1'
1' TYP.
2' TYP.
4'
TAXIWAY CENTERLINE MARKING, YELLOW, WIDTH VARIES 6 OR 12 INCHES. SEE PLANS.
AIRCRAFT HOLDING SIDE
NO BLACK OUTLINE ADJACENT TO ASPHALT SHOULDER
6 INCH BLACK BORDER, TYP.
TAXIWAY EDGE MARKING
ILS HOLDING POSITION MARKING DETAIL
N.T.S.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson
Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
NOTES:
1. DURING LAYOUT OF PROPOSED MARKINGS, THE CONTRACTOR SHALL IMMEDIATELY ADVISE THE ENGINEER IF ANY PROPOSED MARKINGS FALL OUTSIDE OF REQUIRED TOLERANCES. LAYOUT SHALL CEASE UNTIL REVISIONS ARE PROVIDED BY THE ENGINEER.
2. ALL MARKINGS SHALL MEET THE REQUIREMENTS OF FAA ADVISORY CIRCULAR 150/5340-1L
NO. DATE BY REVISION
0 RFM FIRST ISSUE
1 RFM REVISED
DOA CIVIL STANDARD DETAILS
Taxiway Striping and Marking
STANDARD SHEET NUMBER
STD-01-805
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
DATE:
SCALE:
SHEET NO.
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS


72"
4"
31/2"
3"
34"
LINE SPACING SHALL BE 41/2" OF TEXT HEIGHT
DO NOT ENTER
AIRCRAFT MOVEMENT AREA AHEAD
AMA AUTHORIZED VEHICLES & PERSONNEL
ONLY ALLOWED BEYOND THIS POINT
SCREENED WHITE LETTERING & BORDER
RED REFLECTIVE BACKGROUND
RUNWAY/TAXIWAY WARNING SIGN DETAIL
48"
36"
1.5" RADIUS CORNERS
SCREENED RED LETTERING & BORDER
WHITE REFLECTIVE BACKGROUND
.080 ALUMINUM
AUTHORIZED
EMERGENCY VEHICLES
ONLY
APPROACHING ACTIVE TAXIWAY
CONTACT GROUND CONTROL
XXX.XX
LINE SPACING SHALL BE ½ OF TEXT HEIGHT
SEE TABLE 1 FOR FREQUENCY
TABLE 1
RUNWAY COMPLEX FREQUENCY
NORTH (8L–26R, 8R–26L): 121.9
CENTER (9L–27R, 9R–27L): 121.75
SOUTH (10–28): 121.65
TAXIWAY WARNING SIGN DETAIL
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
1 RFM REVISED
0 RFM FIRST ISSUE
NO. DATE BY REVISION
DOA CIVIL STANDARD DETAILS
Miscellaneous Airfield Details
WBS NUMBER:
FC NUMBER:
CONSULTANT PROJECT NUMBER:
STANDARD SHEET NUMBER
STD-01-900
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
DATE:
SCALE:
SHEET NO:
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS
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STD-02 LANDSIDE - ROADS AND PARKING

Hartsfield-Jackson

Atlanta International Airport

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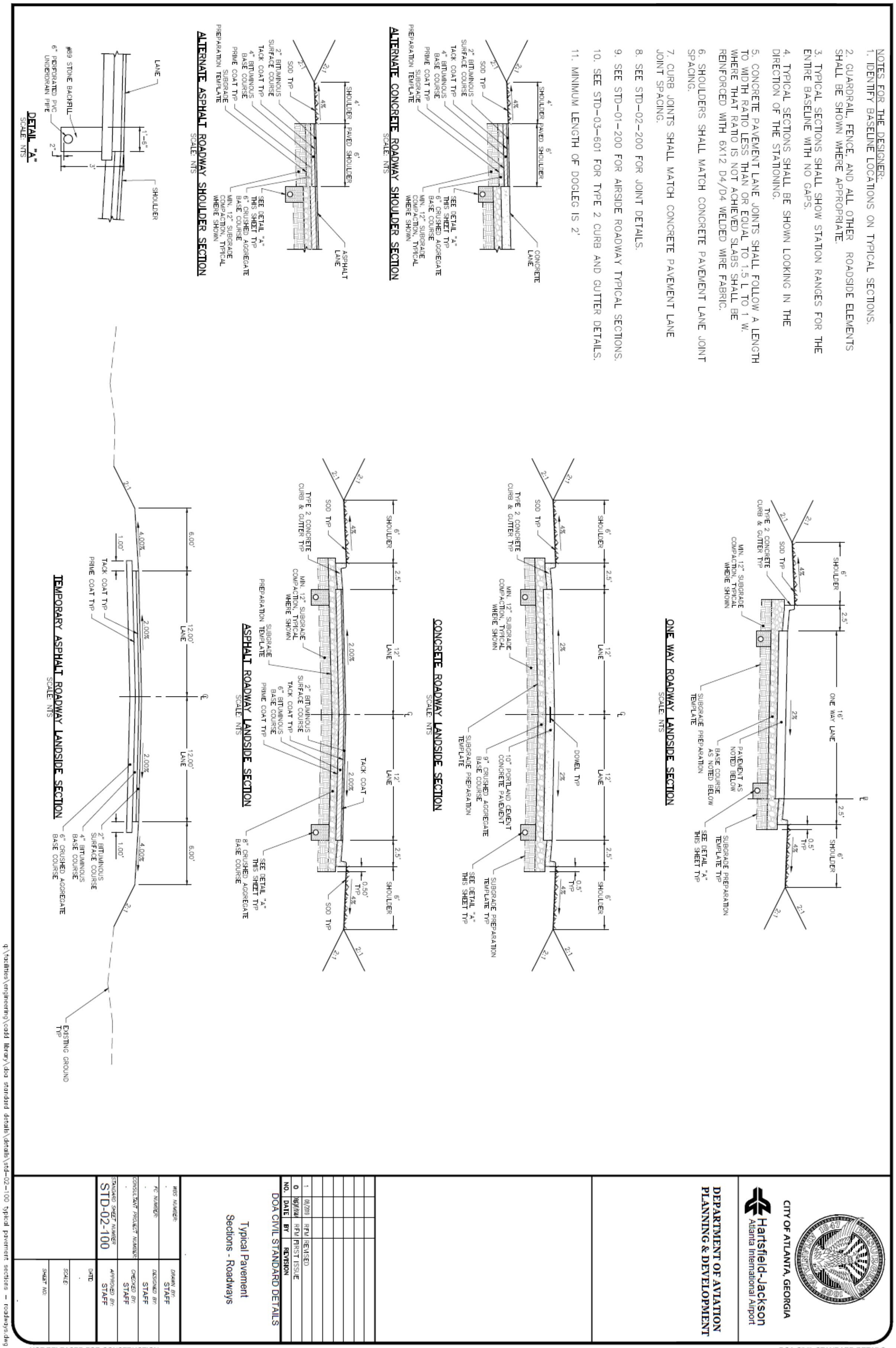
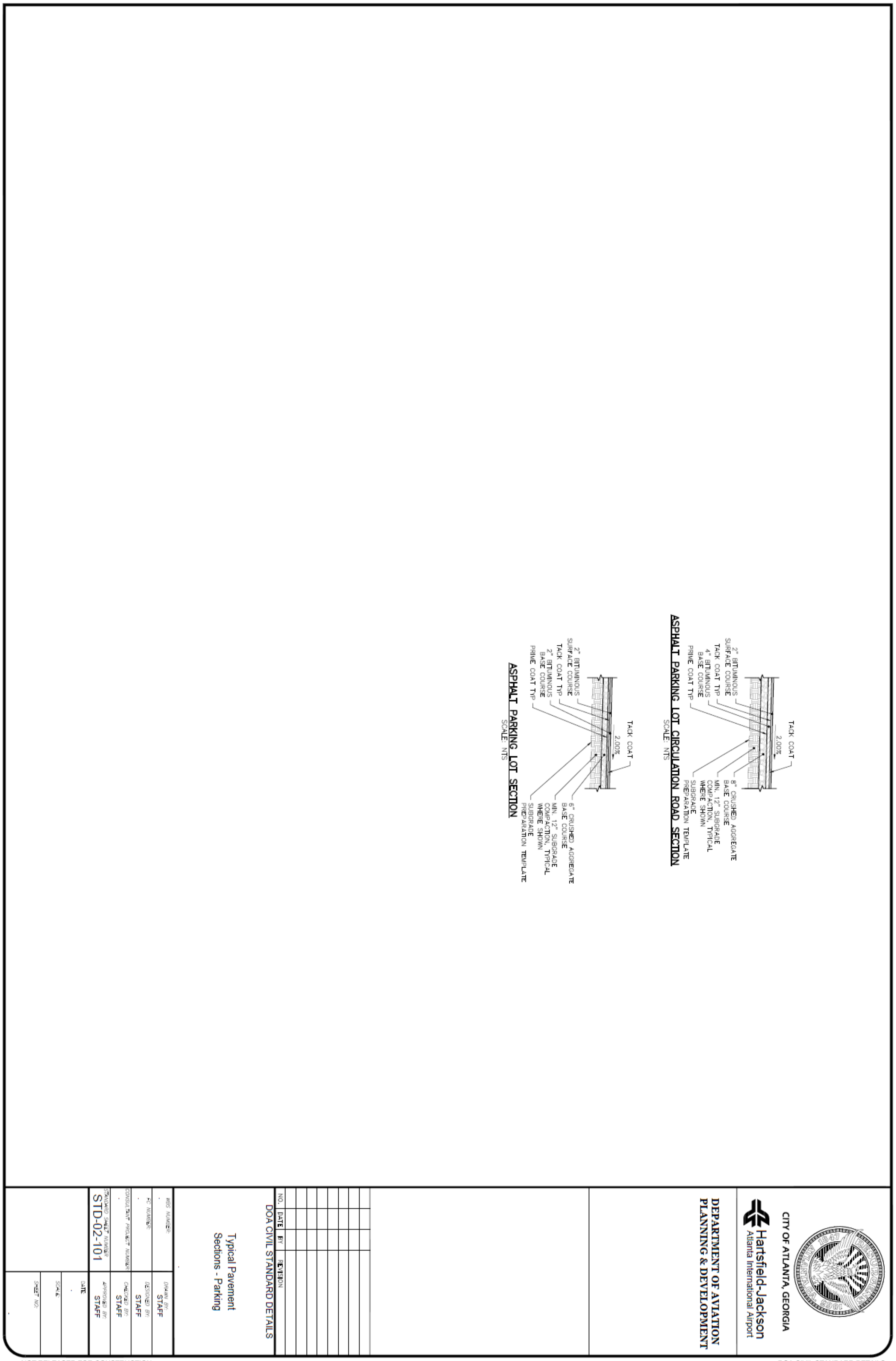
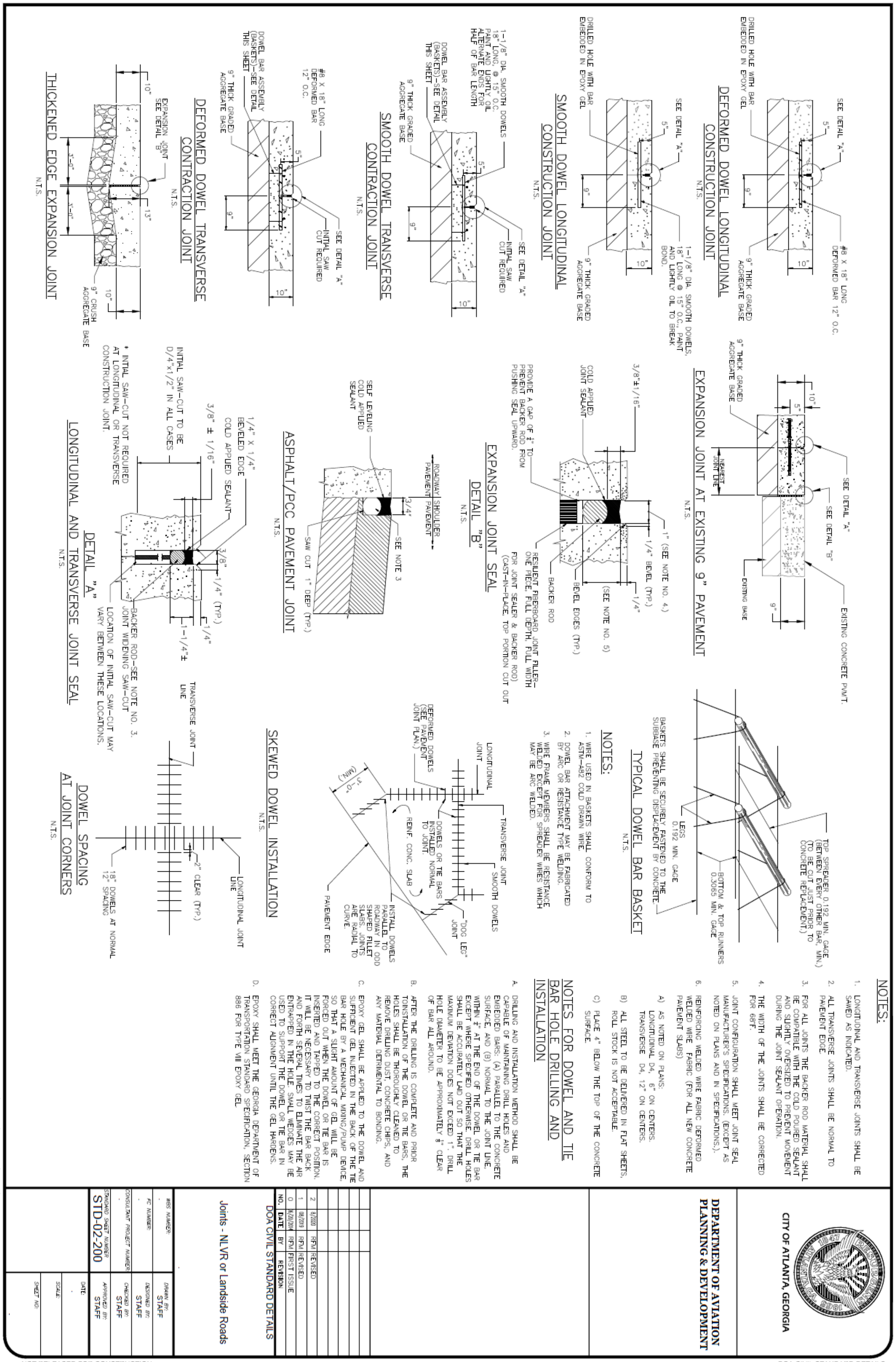
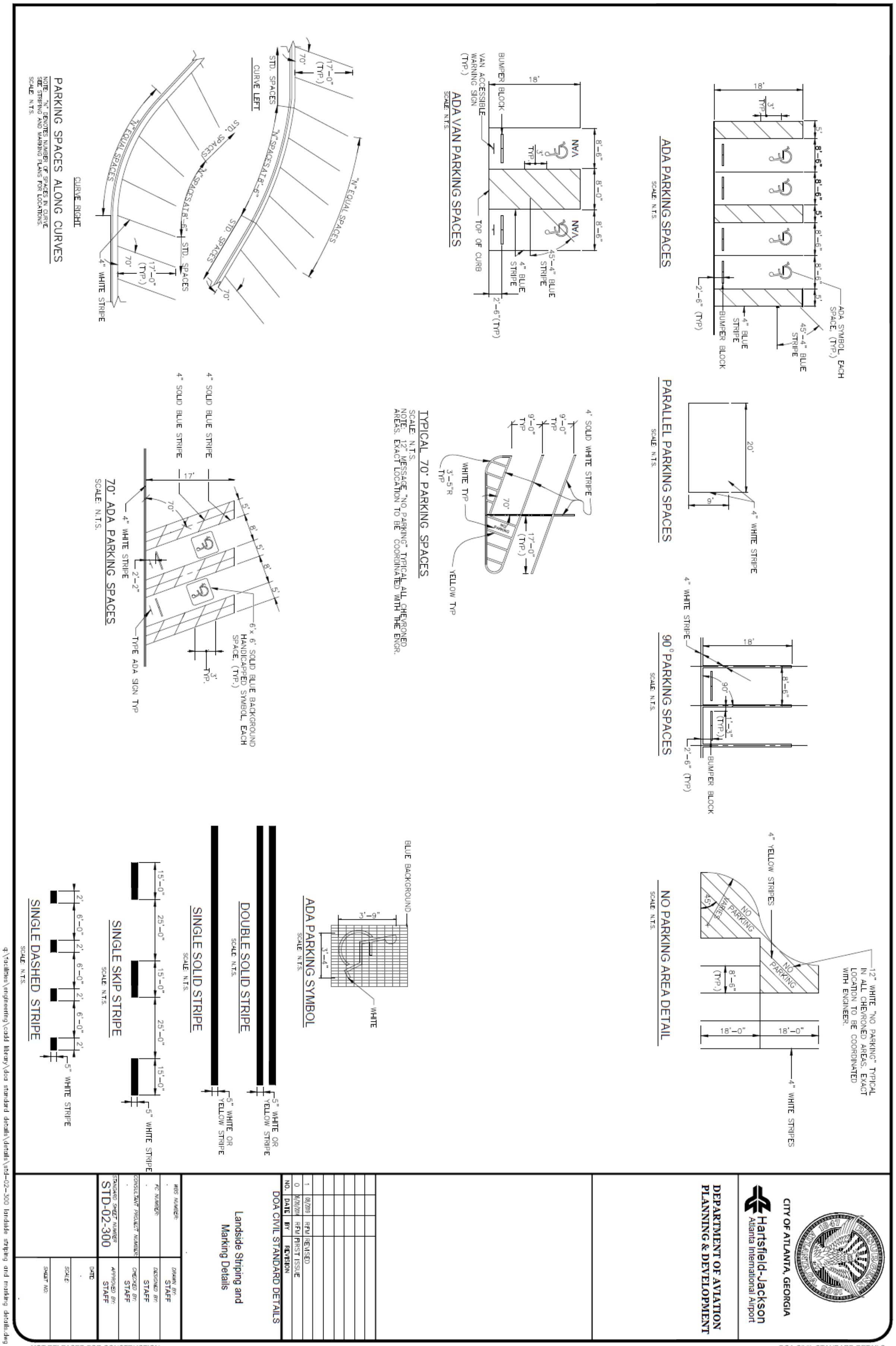
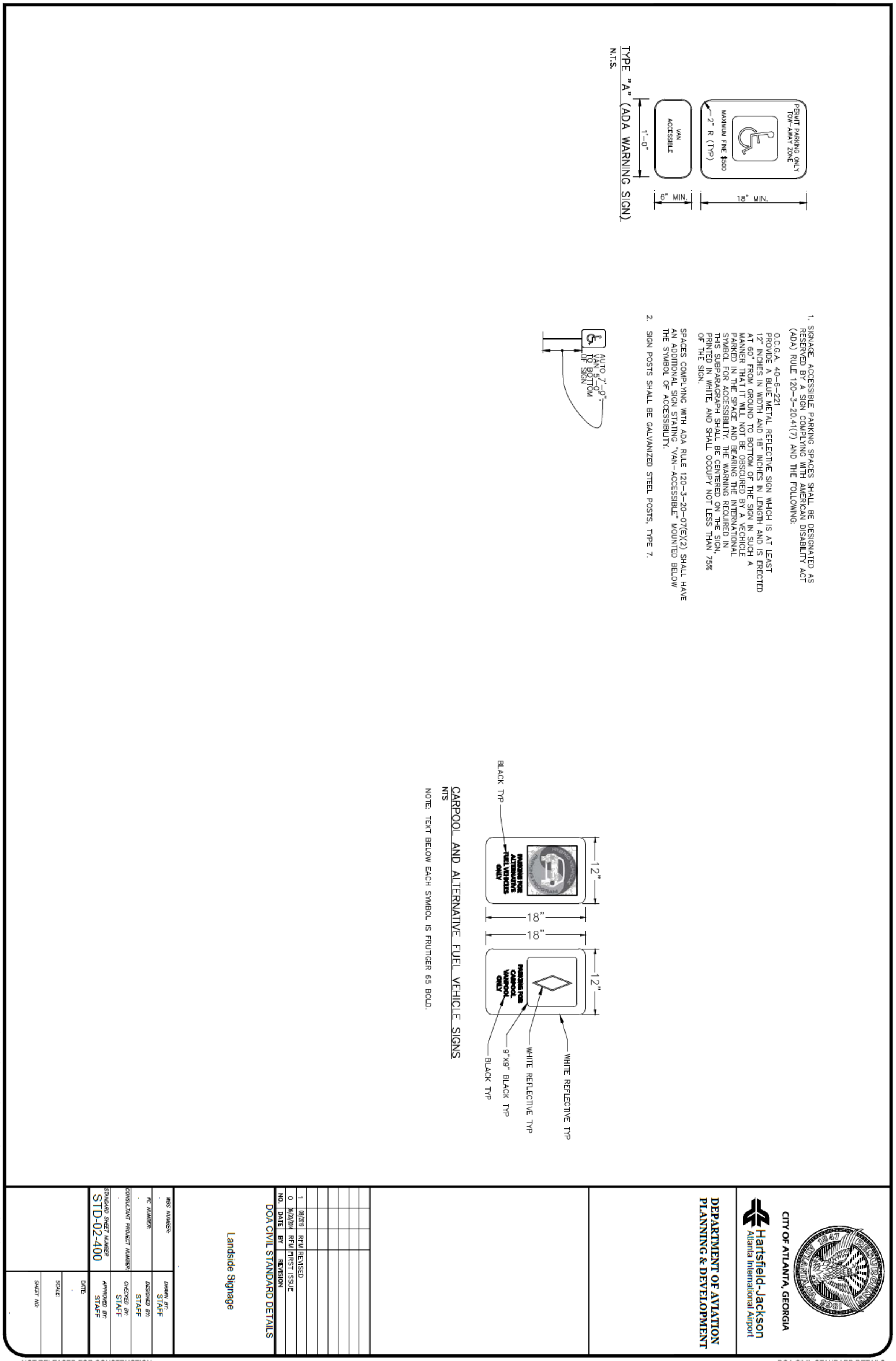
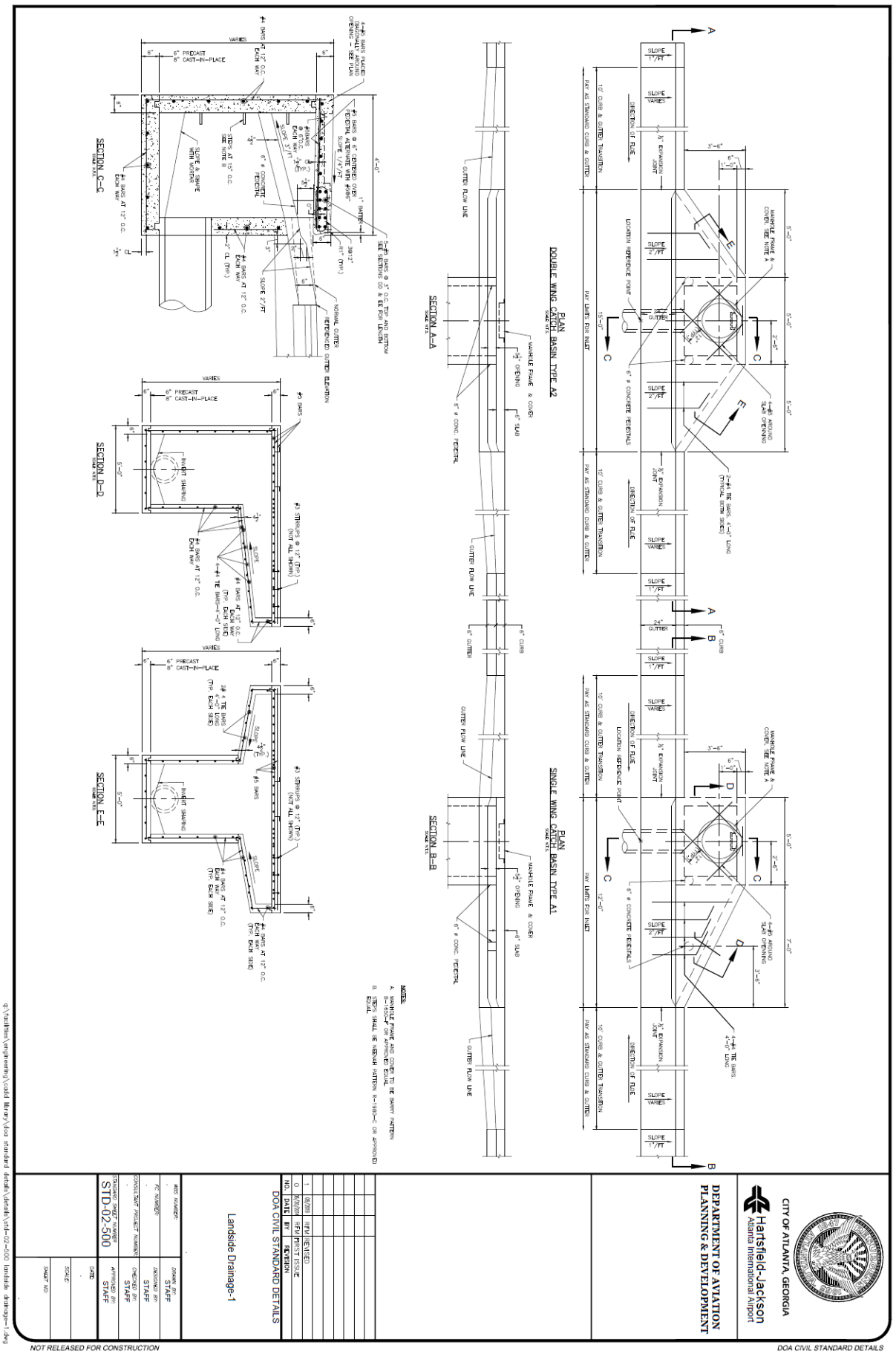

NOTES FOR THE DESIGNER:
1. IDENTIFY BASELINE LOCATIONS ON TYPICAL SECTIONS.
2. GUARDRAIL, FENCE, AND ALL OTHER ROADSIDE ELEMENTS SHALL BE SHOWN WHERE APPROPRIATE.
3. TYPICAL SECTIONS SHALL SHOW STATION RANGES FOR THE ENTIRE BASELINE WITH NO GAPS.
4. TYPICAL SECTIONS SHALL BE SHOWN LOOKING IN THE DIRECTION OF THE STATIONING.
5. CONCRETE PAVEMENT 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 D4/D4 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'
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
ALTERNATE CONCRETE ROADWAY SHOULDER SECTION
SCALE: NTS
ALTERNATE ASPHALT ROADWAY SHOULDER SECTION
SCALE: NTS
DETAIL "A"
SCALE: NTS
SOD TYP
TYPE 2 CONCRETE CURB & GUTTER TYP
MIN. 12" SUBGRADE COMPACTION, TYPICAL WHERE SHOWN
SUBGRADE PREPARATION TEMPLATE
PAVEMENT AS NOTED BELOW
BASE COURSE AS NOTED BELOW
SUBGRADE PREPARATION TEMPLATE TYP
SEE DETAIL "A" THIS SHEET TYP
DOWEL TYP
10" PORTLAND CEMENT CONCRETE PAVEMENT
9" CRUSHED AGGREGATE BASE COURSE
TACK COAT
2" BITUMINOUS SURFACE COURSE
TACK COAT TYP
6" BITUMINOUS BASE COURSE
PRIME COAT TYP
8" CRUSHED AGGREGATE BASE COURSE
4" BITUMINOUS BASE COURSE
6" CRUSHED AGGREGATE BASE COURSE
EXISTING GROUND TYP
#89 STONE BACKFILL
6" PERFORATED PVC UNDERDRAIN PIPE
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
1 08/2019 RFM REVISED
0 RFM FIRST ISSUE
NO. DATE BY REVISION
DOA CIVIL STANDARD DETAILS
Typical Pavement Sections - Roadways
STD-02-100
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
NOT RELEASED FOR CONSTRUCTION
q:\facilities\engineering\cadd library\doa standard details\details\std-02-100 typical pavement sections - roadways.dwg

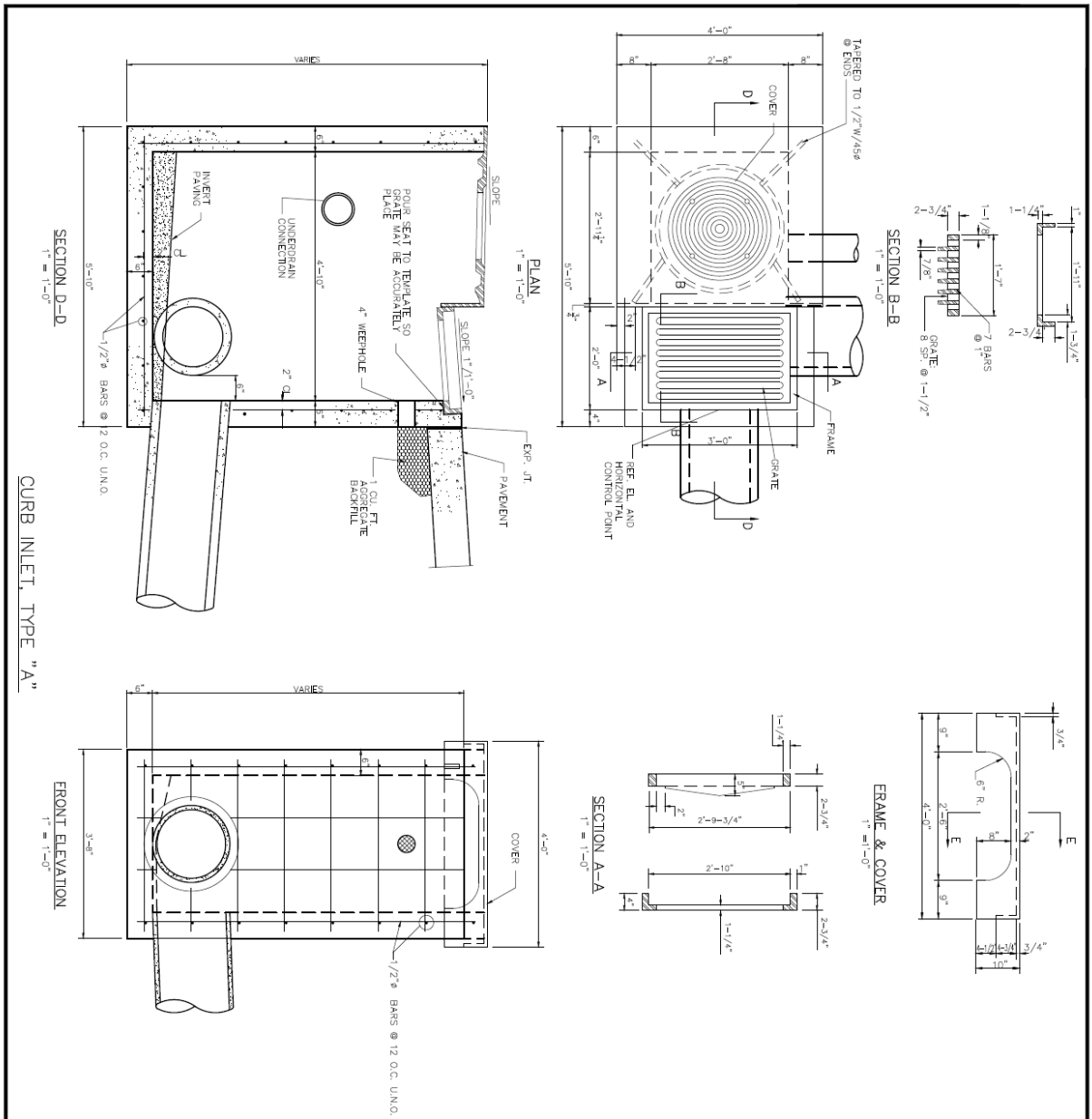

ASPHALT PARKING LOT CIRCULATION ROAD SECTION
SCALE: NTS
TACK COAT
2.00%
2" BITUMINOUS SURFACE COURSE
TACK COAT TYP
4" BITUMINOUS BASE COURSE
PRIME COAT TYP
8" CRUSHED AGGREGATE BASE COURSE
MIN. 12" SUBGRADE COMPACTION, TYPICAL WHERE SHOWN
SUBGRADE PREPARATION TEMPLATE
ASPHALT PARKING LOT SECTION
SCALE: NTS
TACK COAT
2.00%
2" BITUMINOUS SURFACE COURSE
TACK COAT TYP
2" BITUMINOUS BASE COURSE
PRIME COAT TYP
6" CRUSHED AGGREGATE BASE COURSE
MIN. 12" SUBGRADE COMPACTION, TYPICAL WHERE SHOWN
SUBGRADE PREPARATION TEMPLATE
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson
Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
NO.
DATE
BY
REVISION
Typical Pavement
Sections - Parking
STD-02-101
STAFF
STAFF
STAFF
STAFF
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS


DEFORMED DOWEL LONGITUDINAL CONSTRUCTION JOINT
N.T.S.
SMOOTH DOWEL LONGITUDINAL CONSTRUCTION JOINT
N.T.S.
SMOOTH DOWEL TRANSVERSE CONTRACTION JOINT
N.T.S.
DEFORMED DOWEL TRANSVERSE CONTRACTION JOINT
N.T.S.
THICKENED EDGE EXPANSION JOINT
N.T.S.
EXPANSION JOINT AT EXISTING 9" PAVEMENT
N.T.S.
EXPANSION JOINT SEAL DETAIL "B"
N.T.S.
ASPHALT/PCC PAVEMENT JOINT
N.T.S.
DETAIL "A" LONGITUDINAL AND TRANSVERSE JOINT SEAL
N.T.S.
TYPICAL DOWEL BAR BASKET
N.T.S.
NOTES:
1. WIRE USED IN BASKETS SHALL CONFORM TO ASTM-A82 COLD DRAWN WIRE.
2. DOWEL BAR ATTACHMENT MAY BE FABRICATED BY ARC OR RESISTANCE TYPE WELDING.
3. WIRE FRAME MEMBERS SHALL BE RESISTANCE WELDED EXCEPT FOR SPREADER WIRES WHICH MAY BE ARC WELDED.
SKEWED DOWEL INSTALLATION
N.T.S.
DOWEL SPACING AT JOINT CORNERS
N.T.S.
NOTES:
1. LONGITUDINAL AND TRANSVERSE JOINTS SHALL BE SAWED AS INDICATED.
2. ALL TRANSVERSE JOINTS SHALL BE NORMAL TO PAVEMENT EDGE.
3. FOR ALL JOINTS THE BACKER ROD MATERIAL SHALL BE COMPATIBLE WITH THE COLD POURED SEALANT AND SLIGHTLY OVERSIZED TO PREVENT MOVEMENT DURING THE JOINT SEALANT OPERATION.
4. THE WIDTH OF THE JOINTS SHALL BE CORRECTED FOR 68°F.
5. JOINT CONFIGURATION SHALL MEET JOINT SEAL MANUFACTURER'S SPECIFICATIONS. (EXCEPT AS NOTED ON PLANS AND IN SPECIFICATIONS.).
6. REINFORCING WELDED WIRE FABRIC DEFORMED WELDED WIRE FABRIC (FOR ALL NEW CONCRETE PAVEMENT SLABS)
A) AS NOTED ON PLANS: LONGITUDINAL D4, 6" ON CENTERS. TRANSVERSE D4, 12" ON CENTERS.
B) ALL STEEL TO BE DELIVERED IN FLAT SHEETS, ROLL STOCK IS NOT ACCEPTABLE.
C) PLACE 4" BELOW THE TOP OF THE CONCRETE SURFACE.
NOTES FOR DOWEL AND TIE BAR HOLE DRILLING AND INSTALLATION
A. DRILLING AND INSTALLATION METHOD SHALL BE CAPABLE OF MAINTAINING DRILL HOLES AND EMBEDDED BARS: (A) PARALLEL TO THE CONCRETE SURFACE, AND (B) NORMAL TO THE JOINT LINE, WITHIN ¼" AT THE END OF THE DOWEL OR TIE BAR EXCEPT WHERE SPECIFIED OTHERWISE. DRILL HOLES SHALL BE ACCURATELY LAID OUT SO THAT THE MAXIMUM DEVIATION DOES NOT EXCEED 1". DRILL HOLE DIAMETER TO BE APPROXIMATELY ⅛" CLEAR OF BAR ALL AROUND.
B. AFTER THE DRILLING IS COMPLETE AND PRIOR TOINSTALLATION OF THE DOWEL OR TIE BARS, THE HOLES SHALL BE THOROUGHLY CLEANED TO REMOVE DRILLING DUST, CONCRETE CHIPS, AND ANY MATERIAL DETRIMENTAL TO BONDING.
C. EPOXY GEL SHALL BE APPLIED TO THE DOWEL AND SUFFICIENT GEL INJECTED IN THE BACK OF THE TIE BAR HOLE BY A MECHANICAL MIXING/PUMP DEVICE, SO THAT A SLIGHT AMOUNT OF GEL WILL BE FORCED OUT WHEN THE DOWEL OR TIE BAR IS INSERTED AND TAPPED TO THE CORRECT POSITION. IT WILL BE NECESSARY TO TWIST THE BAR BACK AND FORTH SEVERAL TIMES TO ELIMINATE THE AIR ENTRAPPED IN THE HOLE. SMALL WEDGES MAY BE USED TO SUPPORT THE DOWEL OR TIE BAR IN CORRECT ALIGNMENT UNTIL THE GEL HARDENS.
D. EPOXY SHALL MEET THE GEORGIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION, SECTION 886 FOR TYPE VIII EPOXY GEL.
CITY OF ATLANTA, GEORGIA
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
2 8/2020 RFM REVISED
1 08/2019 RFM REVISED
0 RFM FIRST ISSUE
NO. DATE BY REVISION
DOA CIVIL STANDARD DETAILS
Joints - NLVR or Landside Roads
STANDARD SHEET NUMBER STD-02-200
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS


ADA PARKING SPACES
PARALLEL PARKING SPACES
90° PARKING SPACES
NO PARKING AREA DETAIL
ADA VAN PARKING SPACES
TYPICAL 70° PARKING SPACES
ADA PARKING SYMBOL
PARKING SPACES ALONG CURVES
70° ADA PARKING SPACES
DOUBLE SOLID STRIPE
SINGLE SOLID STRIPE
SINGLE SKIP STRIPE
SINGLE DASHED STRIPE
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
Landside Striping and Marking Details
STD-02-300
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS


PERMIT PARKING ONLY TOW-AWAY ZONE
MAXIMUM FINE $500
2" R (TYP)
VAN ACCESSIBLE
18" MIN.
6" MIN.
1'-0"
TYPE "A" (ADA WARNING SIGN)
N.T.S.
1. SIGNAGE. ACCESSIBLE PARKING SPACES SHALL BE DESIGNATED AS RESERVED BY A SIGN COMPLYING WITH AMERICAN DISABILITY ACT (ADA) RULE 120-3-20.41(7) AND THE FOLLOWING:
O.C.G.A. 40-6-221
PROVIDE A BLUE METAL REFLECTIVE SIGN WHICH IS AT LEAST 12" INCHES IN WIDTH AND 18" INCHES IN LENGTH AND IS ERECTED AT 60" FROM GROUND TO BOTTOM OF THE SIGN IN SUCH A MANNER THAT IT WILL NOT BE OBSCURED BY A VECHICLE PARKED IN THE SPACE AND BEARING THE INTERNATIONAL SYMBOL FOR ACCESSIBILITY. THE WARNING REQUIRED IN THIS SUBPARAGRAPH SHALL BE CENTERED ON THE SIGN, PRINTED IN WHITE, AND SHALL OCCUPY NOT LESS THAN 75% OF THE SIGN.
SPACES COMPLYING WITH ADA RULE 120-3-20-07(E)(2) SHALL HAVE AN ADDITIONAL SIGN STATING "VAN-ACCESSIBLE" MOUNTED BELOW THE SYMBOL OF ACCESSIBILITY.
2. SIGN POSTS SHALL BE GALVANIZED STEEL POSTS, TYPE 7.
AUTO 7'-0", VAN 5'-0" TO BOTTOM OF SIGN
12"
18"
PARKING FOR ALTERNATIVE FUEL VEHICLES ONLY
PARKING FOR CARPOOL VANPOOL ONLY
BLACK TYP
WHITE REFLECTIVE TYP
WHITE REFLECTIVE TYP
9"X9" BLACK TYP
BLACK TYP
CARPOOL AND ALTERNATIVE FUEL VEHICLE SIGNS
NTS
NOTE: TEXT BELOW EACH SYMBOL IS FRUTIGER 65 BOLD.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
1 08/2019 RFM REVISED
0 06/20/2014 RFM FIRST ISSUE
NO. DATE BY REVISION
DOA CIVIL STANDARD DETAILS
Landside Signage
WBS NUMBER:
FC NUMBER:
CONSULTANT PROJECT NUMBER:
STANDARD SHEET NUMBER
STD-02-400
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
DATE:
SCALE:
SHEET NO:
DOA CIVIL STANDARD DETAILS
NOT RELEASED FOR CONSTRUCTION
q:\facilities\engineering\cadd library\doa standard details\details\std-02-400 landside signage.dwg


PLAN
DOUBLE WING CATCH BASIN TYPE A2
PLAN
SINGLE WING CATCH BASIN TYPE A1
SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D
SECTION E-E
NOTES:
A. MANHOLE FRAME AND COVER TO BE SNAP-TITE PATTERN R-1916-C OR APPROVED EQUAL
B. GRATE SHALL BE NEENAH PATTERN R-1916-C OR APPROVED EQUAL
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson
Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
Landside Drainage-1
STD-02-500
STAFF
NOT RELEASED FOR CONSTRUCTION


CURB INLET, TYPE "A"
SECTION D–D
1" = 1'–0"
PLAN
1" = 1'–0"
SECTION B–B
1" = 1'–0"
FRONT ELEVATION
1" = 1'–0"
SECTION A–A
1" = 1'–0"
FRAME & COVER
1" = 1'–0"
VARIES
INVERT PAVING
UNDERDRAIN CONNECTION
POUR SEAT TO TEMPLATE SO GRATE MAY BE ACCURATELY PLACE
4" WEEPHOLE
SLOPE 1"/1'–0"
EXP. JT.
PAVEMENT
1 CU. FT. AGGREGATE BACKFILL
1/2"ø BARS @ 12 O.C. U.N.O.
TAPERED TO 1/2"W/45ø ENDS
COVER
FRAME
GRATE
REF. EL. AND HORIZONTAL CONTROL POINT
7 BARS @ 1"
GRATE 8 SP. @ 1-1/2"
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
Landside Drainage-2
DOA CIVIL STANDARD DETAILS
STD-02-501
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS

STD-03 GENERAL DETAILS

Hartsfield-Jackson
Atlanta International Airport

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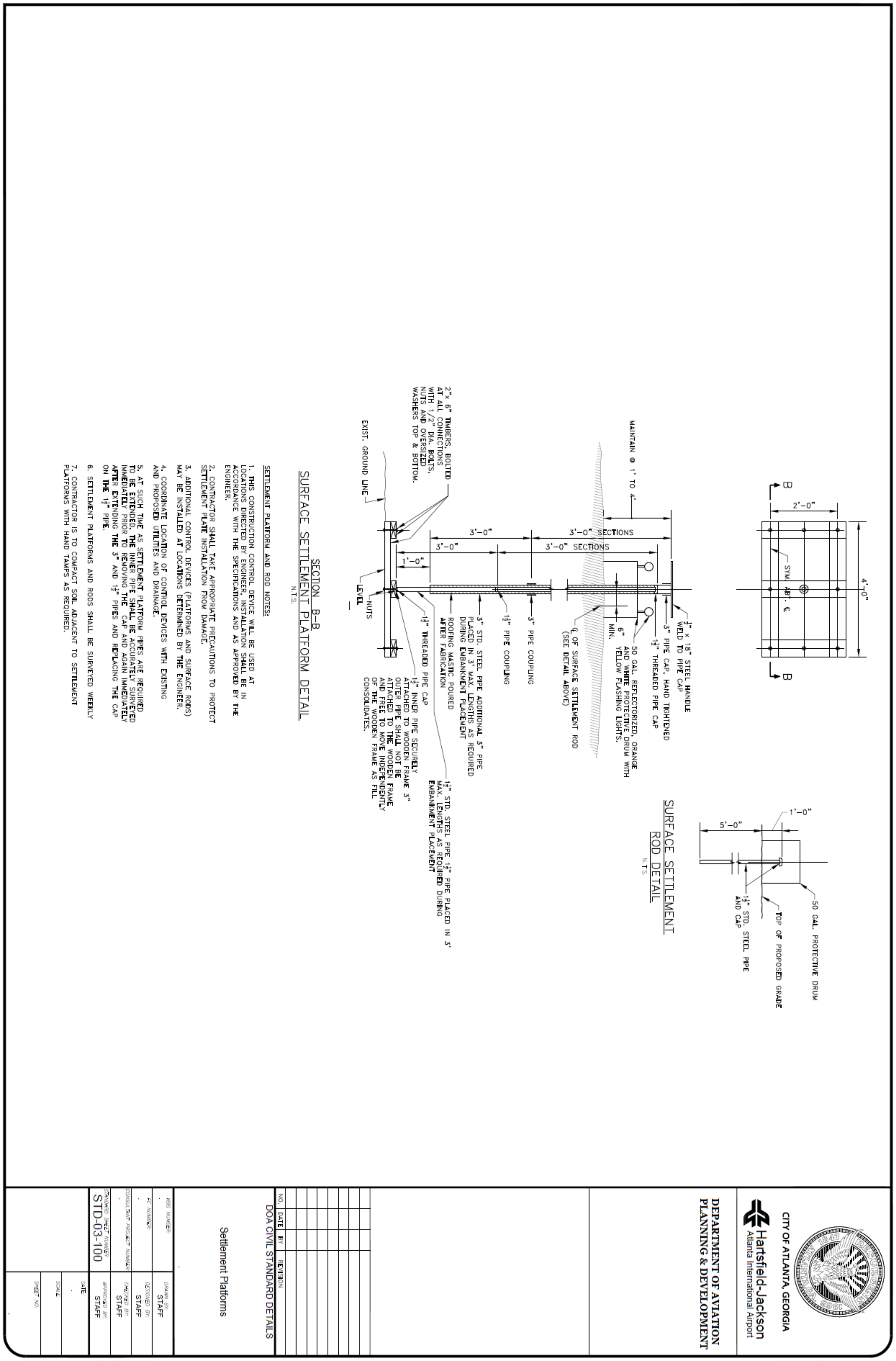
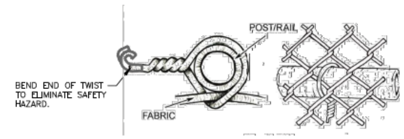

4'-0"
2'-0"
B
SYM. ABT. ℄
B
½" x 18" STEEL HANDLE WELD TO PIPE CAP
3" PIPE CAP, HAND TIGHTENED
1½" THREADED PIPE CAP
MAINTAIN @ 1' TO 4'
50 GAL. REFLECTORIZED, ORANGE AND WHITE PROTECTIVE DRUM WITH YELLOW FLASHING LIGHTS.
6" MIN.
3'-0" SECTIONS
℄ OF SURFACE SETTLEMENT ROD (SEE DETAIL ABOVE)
3" PIPE COUPLING
1½" PIPE COUPLING
3" STD. STEEL PIPE ADDITIONAL 3" PIPE PLACED IN 3' MAX. LENGTHS AS REQUIRED DURING EMBANKMENT PLACEMENT
ROOFING MASTIC POURED AFTER FABRICATION
1½" STD. STEEL PIPE 1½" PIPE PLACED IN 3' MAX. LENGTHS AS REQUIRED DURING EMBANKMENT PLACEMENT
2"x 6" TIMBERS, BOLTED AT ALL CONNECTIONS WITH 1/2" DIA. BOLTS, NUTS AND OVERSIZED WASHERS TOP & BOTTOM.
1½" THREADED PIPE CAP
1½" INNER PIPE SECURELY ATTACHED TO WOODEN FRAME 3" OUTER PIPE SHALL NOT BE ATTACHED TO THE WOODEN FRAME AND FREE TO MOVE INDEPENDENTLY OF THE WOODEN FRAME AS FILL CONSOLIDATES.
1'-0"
EXIST. GROUND LINE
NUTS
LEVEL
SECTION B-B
SURFACE SETTLEMENT PLATFORM DETAIL
N.T.S.
50 GAL. PROTECTIVE DRUM
TOP OF PROPOSED GRADE
1½" STD. STEEL PIPE AND CAP
5'-0"
SURFACE SETTLEMENT ROD DETAIL
N.T.S.
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 ACCURATELY SURVEYED IMMEDIATELY PRIOR TO REMOVING THE CAP AND AGAIN IMMEDIATELY AFTER EXTENDING THE 3" AND 1½" PIPES AND REPLACING THE CAP ON THE 1½" 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.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson
Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
NO. DATE BY REVISION
DOA CIVIL STANDARD DETAILS
Settlement Platforms
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
STANDARD SHEET NUMBER STD-03-100
DOA CIVIL STANDARD DETAILS
NOT RELEASED FOR CONSTRUCTION

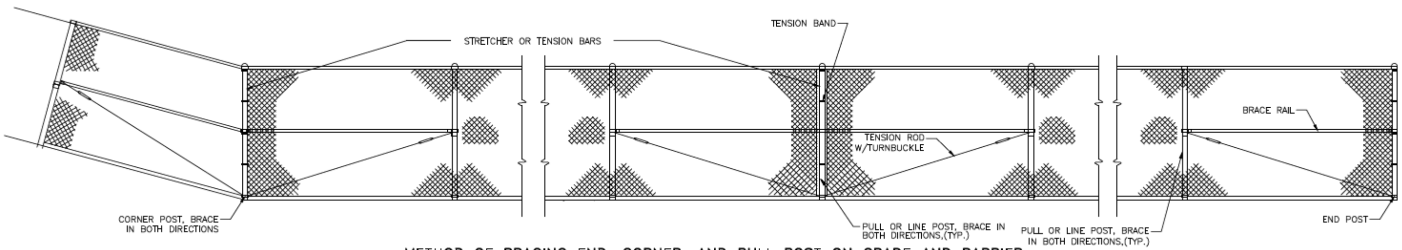


BOTTOM RAIL TIE

9 GAUGE TWIST VINYL COATED TIES THAT MEET OR EXCEED ASTM F626.1.2.1. HIGH-SECURITY ROUND WIRE TIES (POWER-FASTENED ROUND WIRE TIES).

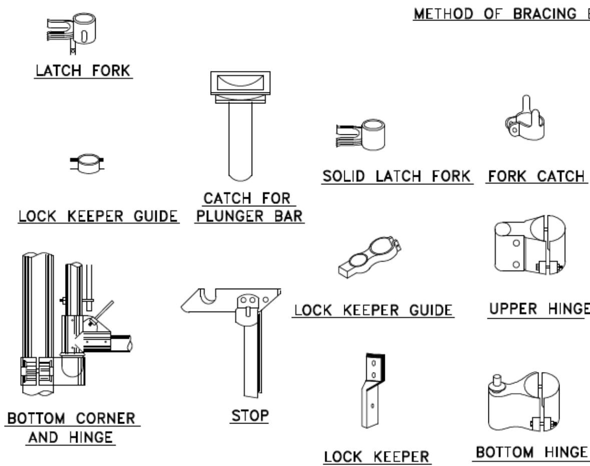
NOTE:

1. AT EVERY BOTTOM FENCE RAIL, INSTALL 9 GAUGE BOTTOM RAIL TIES BLACK VINYL COATED TIES AT 12" INCHES CENTER TO CENTER.



METHOD OF BRACING END, CORNER, AND PULL POST ON GRADE AND BARRIER

N.T.S.



FENCING NOTES:

1. ALL FENCE FABRIC SHALL BE 9 GAUGE BLACK PVC COATED GALVANIZED CHAIN LINK FABRIC WITH 2" MESH (TEMPORARY FENCE NOT COATED. SEE SPECIFICATIONS AND DETAILS FOR FENCE MATERIALS AND FITTINGS).

2. ALL BARBED WIRE SHALL BE 2 STRAND, 12 ½ GAUGE BLACK PVC COATED GALVANIZED STEEL WITH 4 POINT BARBS AT 4" C.C. (TEMPORARY FENCE BARBED WIRE STRANDS NOT COATED).

3. ALL POSTS AND ACCESSORIES/FITTINGS SHALL BE BLACK PVC COATED GALVANIZED STEEL (TEMPORARY FENCE NOT COATED).

4. HORIZONTAL BRACE RAILS, TRUSS BRACING AND STRETCHER OR TENSION BARS ATTACHED TO POST BY MEANS OF BANDS, SHALL BE USED FOR END, CORNER, ANGLE, AND INTERMEDIATE BRACE POSTS AND WHERE REQUIRED BY THE ENGINEER.

5. FITTINGS SHOWN ARE SUGGESTED ONLY. SIMILAR DESIGNS MEETING THE APPROVAL OF THE ENGINEER MAY BE USED. ALL FITTINGS TO BE MALLEABLE IRON, CAST IRON, OR PRESSED STEEL. CONTRACTOR SHALL SUBMIT AND RECEIVE APPROVAL FOR APPROPRIATE SHOP DRAWINGS.

6. SWING GATE CONSTRUCTION VARIES WITH WIDTH. GATE FRAMES SHALL MEET CHAIN LINK FENCE MANUFACTURER'S INSTITUTE PRODUCT MANUAL INDUSTRIAL STEEL SPECIFICATIONS WITH RESPECT TO HORIZONTAL AND VERTICAL MEMBERS.

7. ALL CHAIN LINK FENCE MATERIALS AND FITTINGS SHALL BE OF HIGH GRADE DOMESTIC QUALITY STEEL AND SHALL BEAR MARKINGS AS BEING SUCH.

8. THE CHAIN LINK FABRIC SHALL BE PLACED ON THE OUTWARD FACE OF THE POSTS, TAUT AND SECURELY FASTENED.

9. MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH F.A.A. STANDARD SPECIFICATIONS AND THE SPECIAL PROVISIONS OF THIS CONTRACT.

10. ALL EXPOSED METALS SUCH AS NUTS AND BOLTS AND WELDED AREAS SHALL BE PAINTED WITH COLOR TO MATCH FENCE SYSTEM.

11. ALL SIZES AND GAUGES FOR PIPE POSTS, ROD AND WIRES ARE OUTSIDE DIAMETERS WHICH INCLUDES THE VINYL COATING THICKNESS.

12. CONTRACTOR SHALL PROVIDE CHAIN AND LOCK TO SECURE GATES.

13. INTERMEDIATE OR LINE POSTS SHALL BE REQUIRED AT 250FT. INTERVALS AND AT GRADE CHANGES EXCEEDING 5% FOR CORNER AND PULL POSTS. BRACE RAIL AND TENSION ROD PANEL TO JOIN POST IN BOTH DIRECTIONS.

14. 24" DIAMETER REINFORCED CONCERTINA BARBED TAPE SHALL HAVE .098' DIAMETER STAINLESS STEEL STRIP MATERIAL AND A .098' DIAMETER GALVANIZED STEEL CORE AND BE INSTALLED AT 14" SPACING ON CENTER.

15. 18" DIAMETER SINGLE LOOP BARBED WIRE SHALL HAVE .098' DIAMETER STAINLESS STEEL STRIP MATERIAL AND A .098' DIAMETER GALVANIZED STEEL CORE AND BE INSTALLED WITH A 6" OVERLAP SPACING.

16. 9 GAUGE TWIST VINYL COATED TIES MEET OR EXCEED ASTM F626.1.2.1. HIGH-SECURITY ROUND WIRE TIES (POWER-FASTENED ROUND WIRE TIES)

17. TOP AND BOTTOM TENSION WIRES WILL BE REQUIRED ON TEMPORARY FENCES.

18. FENCING ON CONCRETE BARRIER SHALL BE SIMILAR. CONTRACTOR SHALL PROVIDE APPROPRIATE TRANSITION SECTIONS.

19. SEE SHEET STD-03-206 FOR SIGNAGE REQUIREMENTS.

CITY OF ATLANTA, GEORGIA

Hartsfield-Jackson Atlanta International Airport

DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT

NO.	DATE	BY	REVISION
1	10/2023	RFM	REVISED
0	06/20/2014	RFM	FIRST ISSUE

DOA CIVIL STANDARD DETAILS

Chain Link Fences - 1

WBS NUMBER: -	DRAWN BY: STAFF
FC NUMBER: -	DESIGNED BY: STAFF
CONSULTANT PROJECT NUMBER: -	CHECKED BY: STAFF
STANDARD SHEET NUMBER: STD-03-200	APPROVED BY: STAFF
	DATE: -
	SCALE:
	SHEET NO: -

DOA CIVIL STANDARD DETAILS

NOT RELEASED FOR CONSTRUCTION

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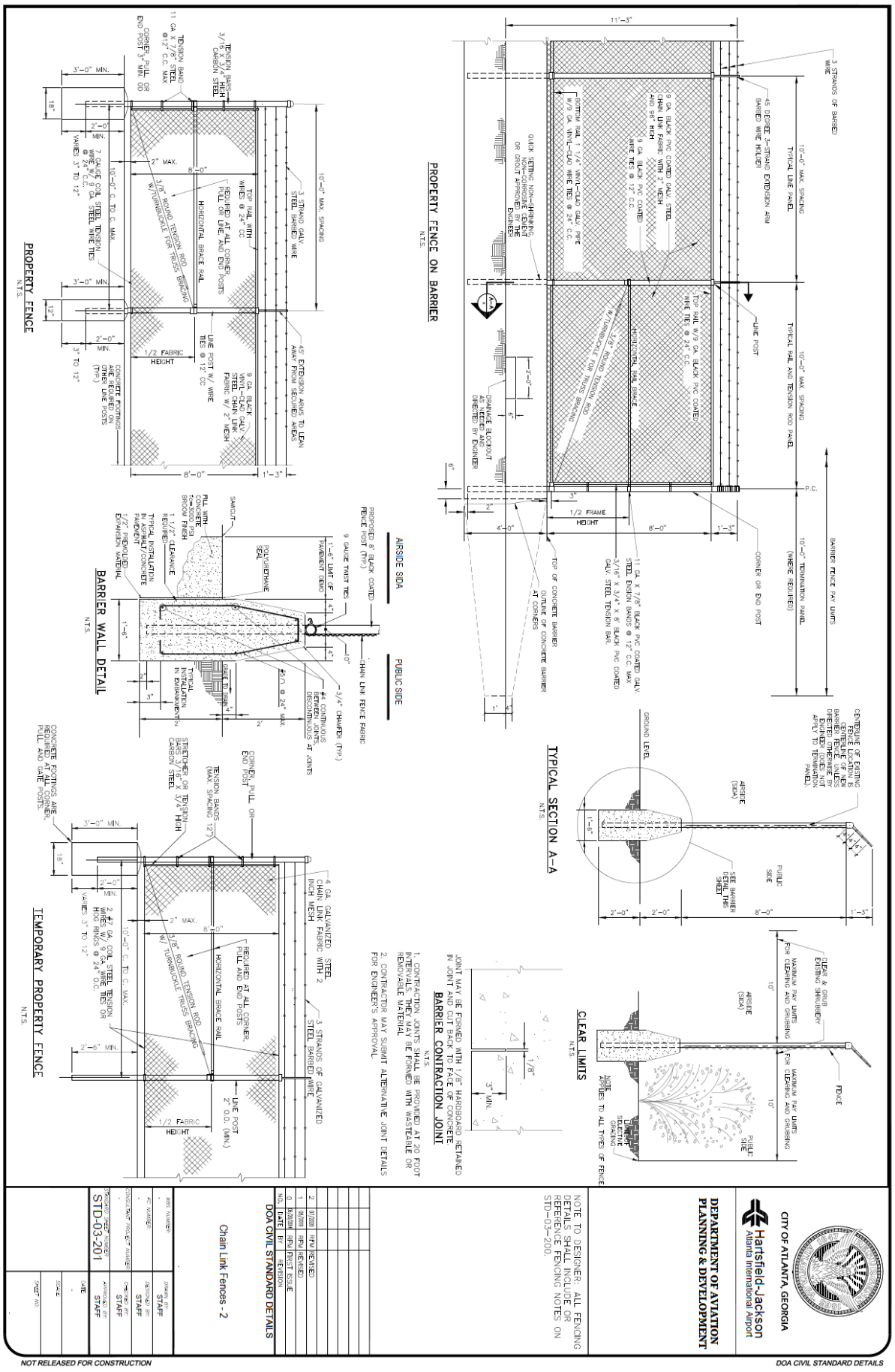
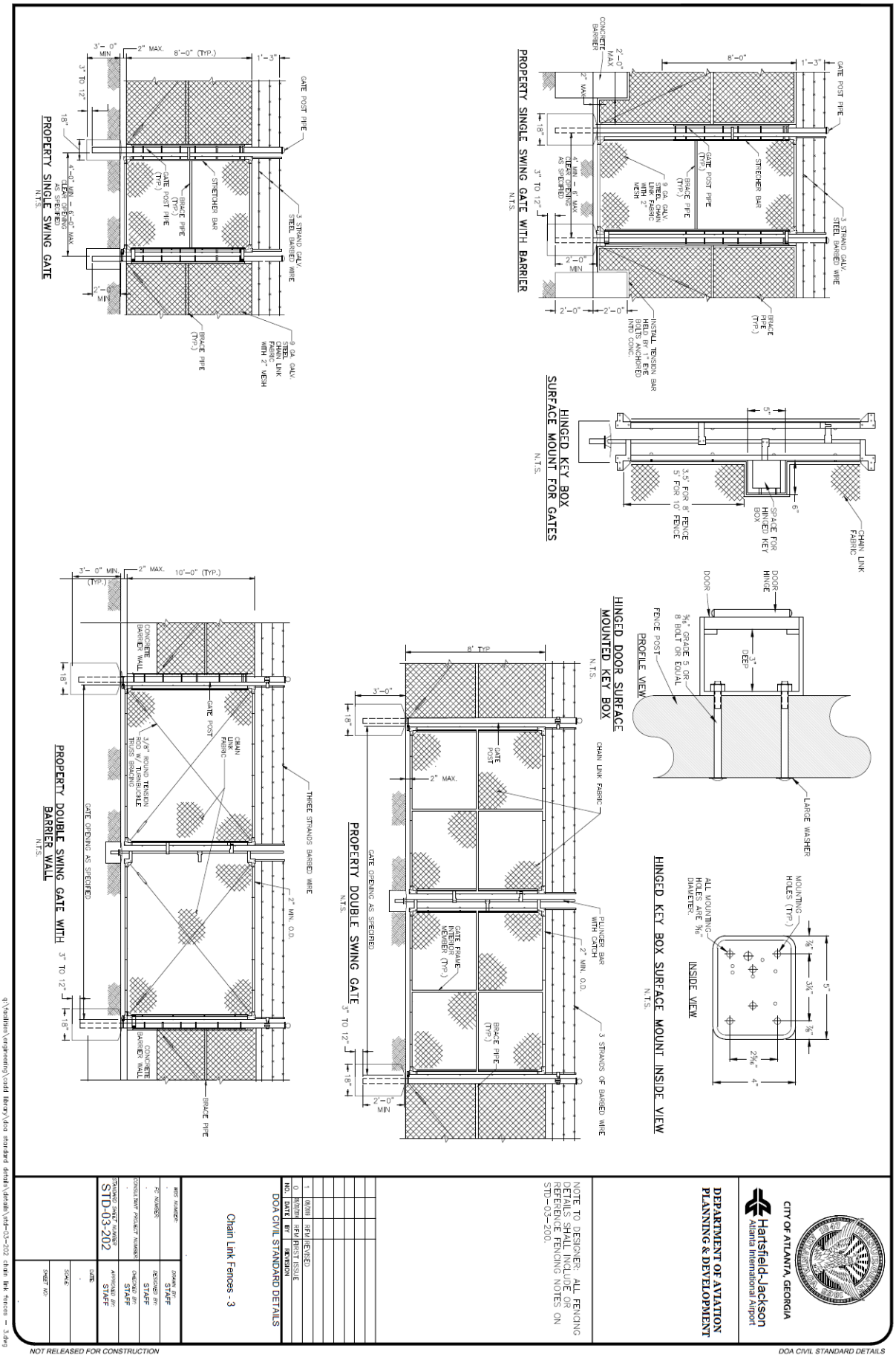
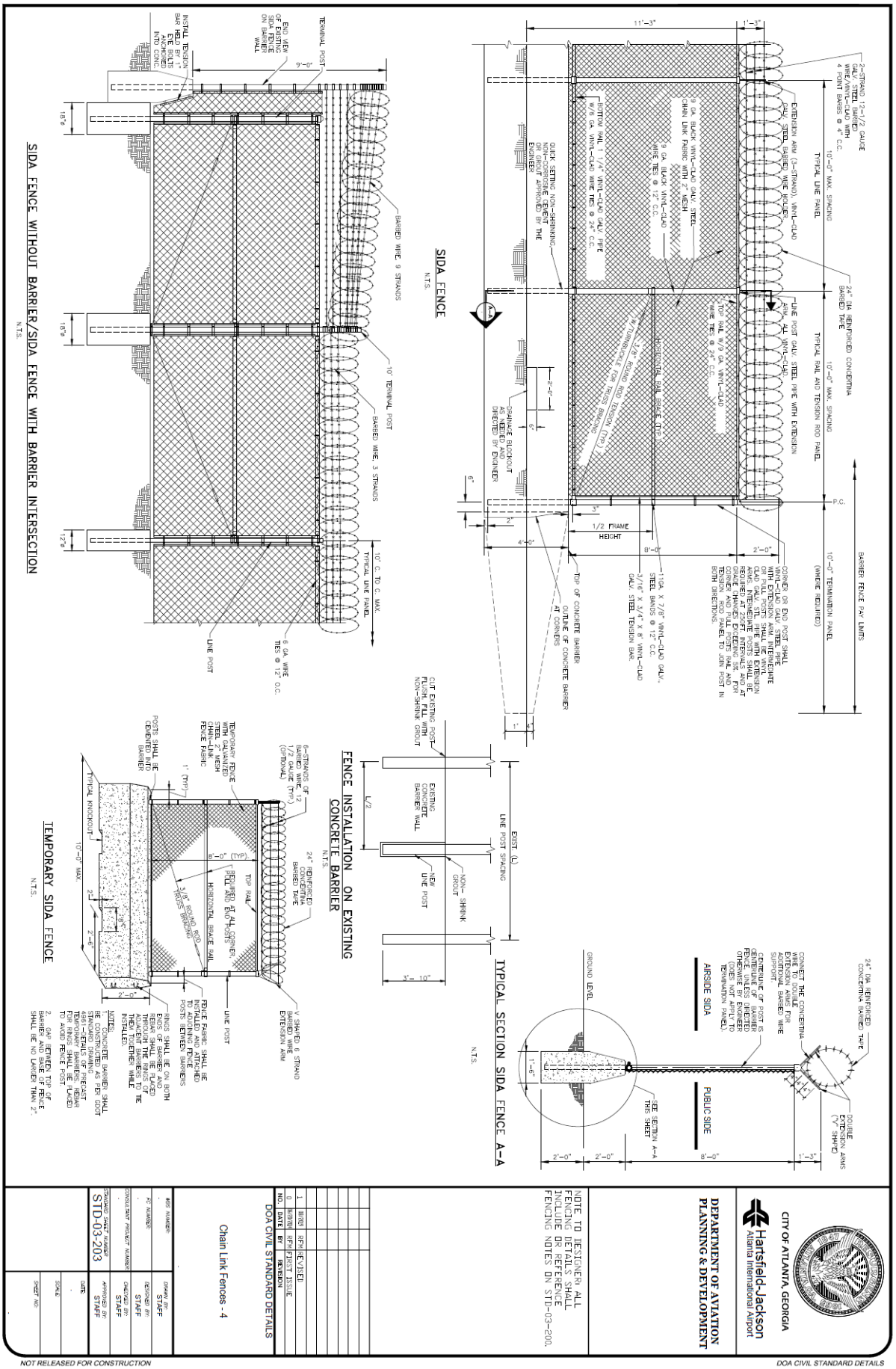
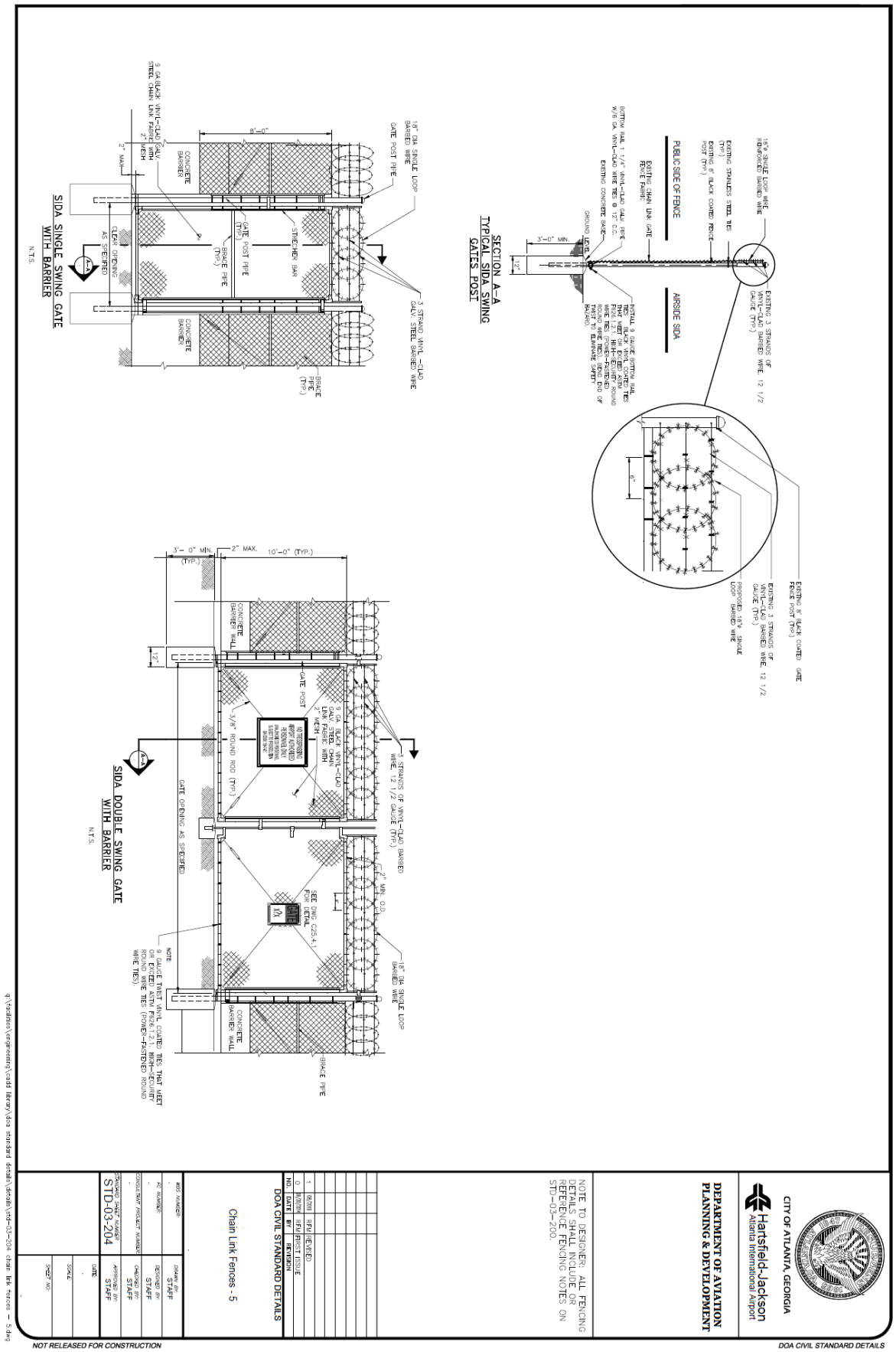
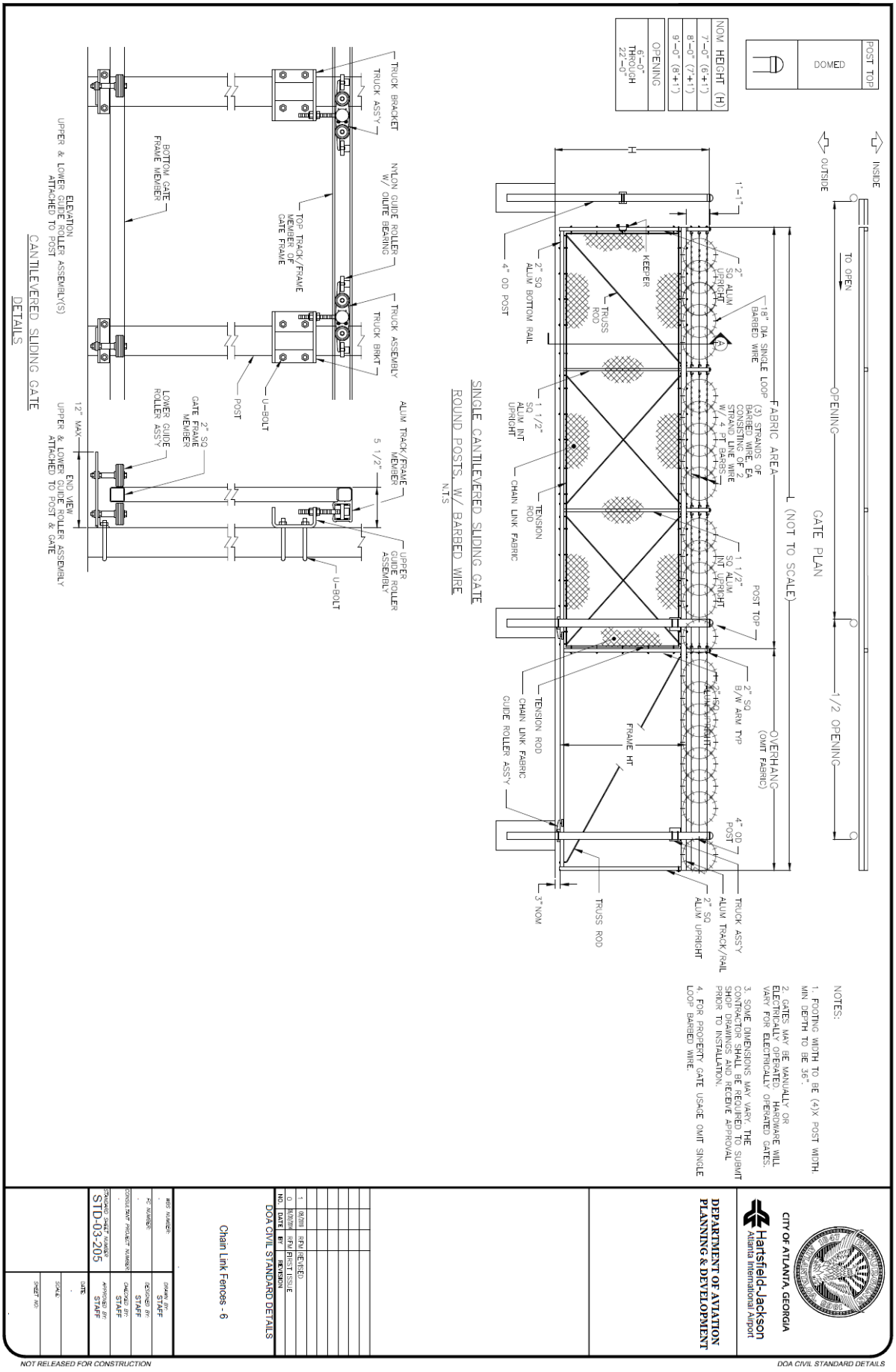
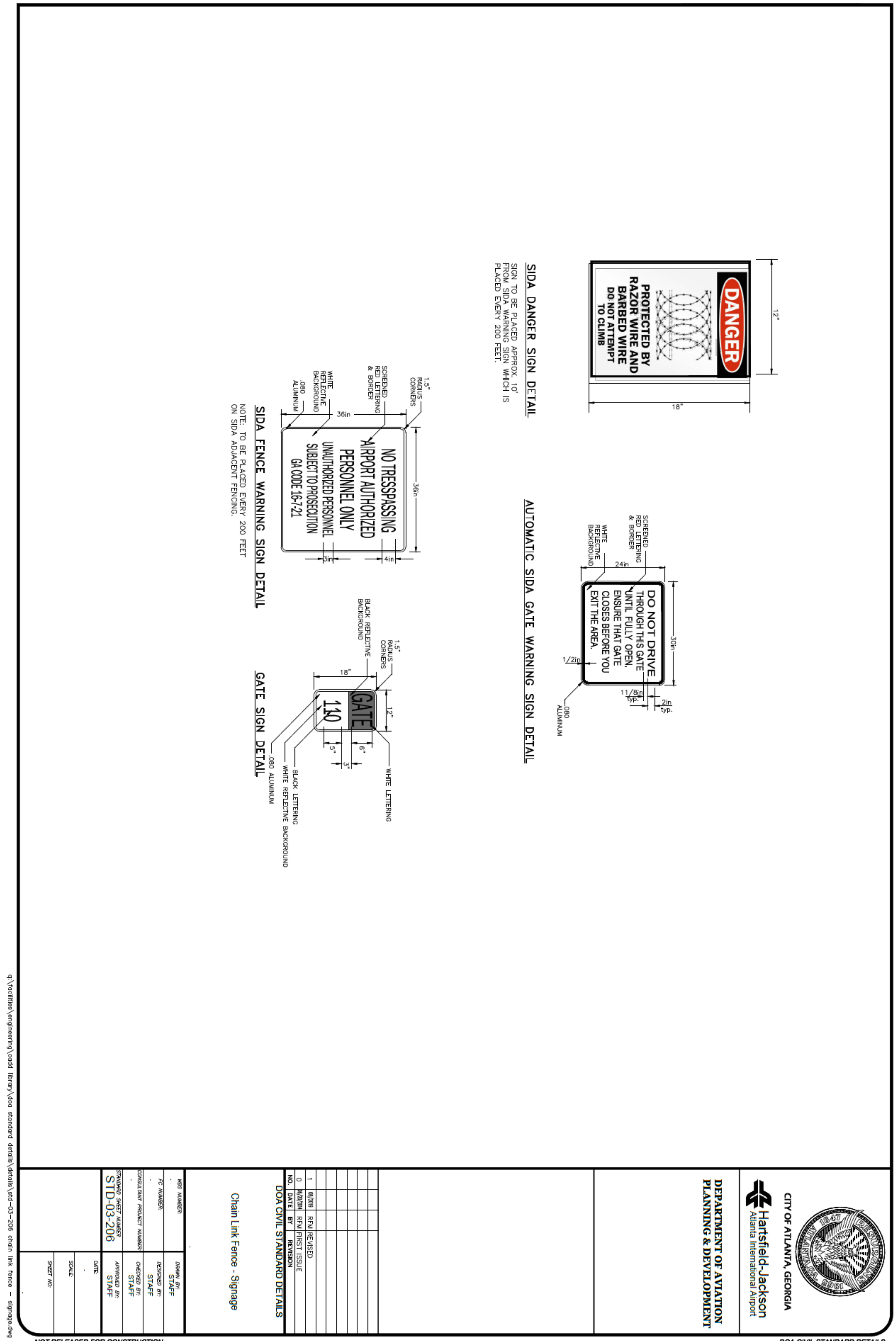

PROPERTY FENCE ON BARRIER
N.T.S.
3 STRANDS OF BARBED WIRE
45 DEGREE 3-STRAND EXTENSION ARM BARBED WIRE HOLDER
10'-0" MAX. SPACING TYPICAL LINE PANEL
10'-0" MAX. SPACING TYPICAL RAIL AND TENSION ROD PANEL
BARRIER FENCE PAY LIMITS
10'-0" TERMINATION PANEL (WHERE REQUIRED)
9 GA. BLACK PVC COATED GALV. STEEL CHAIN LINK FABRIC WITH 2" MESH AND 96" HIGH
9 GA. BLACK PVC COATED WIRE TIES @ 12" C.C.
BOTTOM RAIL 1 1/4" VINYL-CLAD GALV. PIPE W/9 GA. VINYL-CLAD WIRE TIES @ 24" C.C.
QUICK SETTING NON-SHRINKING, NON-CORROSIVE CEMENT OR GROUT APPROVED BY ENGINEER
LINE POST
TOP RAIL W/9 GA. BLACK PVC COATED WIRE TIES @ 24" C.C.
HORIZONTAL RAIL BRACE
3/8" ROUND TENSION ROD W/TURNBUCKLE FOR TRUSS BRACING
DRAINAGE BLOCKOUT AS NEEDED AND DIRECTED BY ENGINEER
CORNER OR END POST
11 GA. X 7/8" BLACK PVC COATED GALV. STEEL TENSION BANDS @ 12" C.C. MAX.
3/16" X 3/4" X 8' BLACK PVC COATED GALV. STEEL TENSION BAR
TOP OF CONCRETE BARRIER AT CORNERS
OUTLINE OF CONCRETE BARRIER
1/2 FRAME HEIGHT
P.C.
4'-0"
8'-0"
1'-3"
1'
6"
PROPERTY FENCE
N.T.S.
3'-0" MIN.
18"
2'-0" MIN.
CORNER, END POST OR PULL POST 3" MIN. OD
11 GA. TENSION BAND STEEL @ 12" C.C. MAX.
TENSION BAR 3/16" X 3/4" CARBON STEEL
BRACE RAIL
10'-0" MAX. SPACING
3 STRAND GALV. STEEL BARBED WIRE
2" MAX.
8'-0"
TOP RAIL WITH WIRES @ 24" CC
REQUIRED AT ALL CORNER, PULL OR LINE, AND END POSTS
HORIZONTAL BRACE RAIL
3/8" ROUND TENSION ROD W/TURNBUCKLE FOR TRUSS BRACING
10'-0" C. TO C. MAX.
7 GAUGE COIL STEEL TENSION WIRE @ 24" C.C. VARIES 3" TO 12"
9 GA. BLACK VINYL-CLAD GALV. STEEL CHAIN LINK FABRIC W/ 2" MESH
45° EXTENSION ARMS TO LEAN AWAY FROM SECURED AREAS
LINE POST W/ WIRE TIES @ 12" CC
1/2 FABRIC HEIGHT
2'-0" MIN.
3" TO 12"
CONCRETE FOOTINGS ARE REQUIRED ON OTHER LINE POSTS (TYP.)
1'-3"
TYPICAL SECTION A-A
N.T.S.
GROUND LEVEL
CENTERLINE OF EXISTING FENCE LOCATION IS APPROXIMATE UNLESS BARRIER FENCE LINE IS DIRECTED OTHERWISE BY ENGINEER. FENCE SHALL RETURN AT 90° TO TERMINATION PANEL
AIRSIDE (SIDA)
PUBLIC SIDE
SEE BARRIER DETAIL THIS SHEET
1'-6"
2'-0"
8'-0"
1'-3"
CLEAR LIMITS
N.T.S.
CLEAR & GRUB EXISTING SHRUBBERY
MAXIMUM PAY LIMITS FOR CLEARING AND GRUBBING
10'
FENCE
NOTE APPLIES TO ALL TYPES OF FENCE
BARRIER WALL DETAIL
N.T.S.
AIRSIDE SIDA
PUBLIC SIDE
PROPOSED 6" BLACK COATED FENCE POST (TYP.)
9 GAUGE TWIST TIES
1'-6" LIMIT OF PAVEMENT TIEING
CHAIN LINK FENCE FABRIC
SAWCUT
FILL WITH CONCRETE TO MATCH BROOM FINISH
1 1/2" CLEARANCE REQUIRED
TYPICAL INSTALLATION IN ASPHALT/CONCRETE PAVEMENT
1/2" PREMOLDED EXPANSION MATERIAL
ROLLED ASPHALT SEAL
4" CONTINUOUS BETWEEN JOINTS, DISCONTINUOUS AT JOINTS
3/4" CHAMFER (TYP.)
#5 O @ 24" MAX.
10"
4"
1'-6"
3"
2"
TYPICAL INSTALLATION IN EMBANKMENT
TEMPORARY PROPERTY FENCE
N.T.S.
CONCRETE FOOTINGS ARE REQUIRED ON CORNER, PULL AND GATE POSTS
CORNER, END POST OR PULL POST
TENSION BANDS (MAX. SPACING 12')
STRETCHER OR TENSION BARS 3/16" X 3/4" CARBON STEEL
3'-0" MIN.
18"
2'-0" MIN.
VARIES 3" TO 12"
2" MAX.
10'-0" C. TO C. MAX.
2 #7 GA. COIL STEEL TENSION WIRE W/ 9 GA. WIRE TIES OR HOG RINGS @ 24" O.C.
REQUIRED AT ALL CORNER, PULL AND END POSTS
HORIZONTAL BRACE RAIL
3/8" ROUND TENSION ROD W/ TURNBUCKLE TRUSS BRACING
2'-6" MIN.
4 GA. GALVANIZED CHAIN LINK MESH FABRIC WITH 2 INCH MESH
3 STRANDS OF GALVANIZED STEEL BARBED WIRE
LINE POST 2" O.D. (MIN.)
1/2 FABRIC HEIGHT
JOINT MAY BE FORMED WITH 1/8" HARDBOARD RETAINED IN JOINT AND CUT BACK TO FACE OF CONCRETE
1/8"
3" MIN.
BARRIER CONTRACTION JOINT
N.T.S.
1. CONTRACTION JOINTS SHALL BE PROVIDED AT 20 FOOT INTERVALS. THEY MAY BE FORMED WITH WASTEABLE OR REMOVABLE MATERIAL
2. CONTRACTOR MAY SUBMIT ALTERNATIVE JOINT DETAILS FOR ENGINEER'S APPROVAL
NOTE TO DESIGNER: ALL FENCING DETAILS SHALL INCLUDE OR REFERENCE FENCING NOTES ON STD-03-200.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
NO. DATE BY REVISION
0 MONTH/YR RPU FIRST ISSUE
1 07/2008 RPU REVISED
2 RPU REVISED
DOA CIVIL STANDARD DETAILS
Chain Link Fences -2
PROJECT NO. (IF APPLICABLE)
STD-03-201
CONSULTANT PROJECT NUMBER
DRAWN BY STAFF
DESIGNED BY STAFF
CHECKED BY STAFF
APPROVED BY STAFF
DATE
SCALE
SHEET NO.
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS

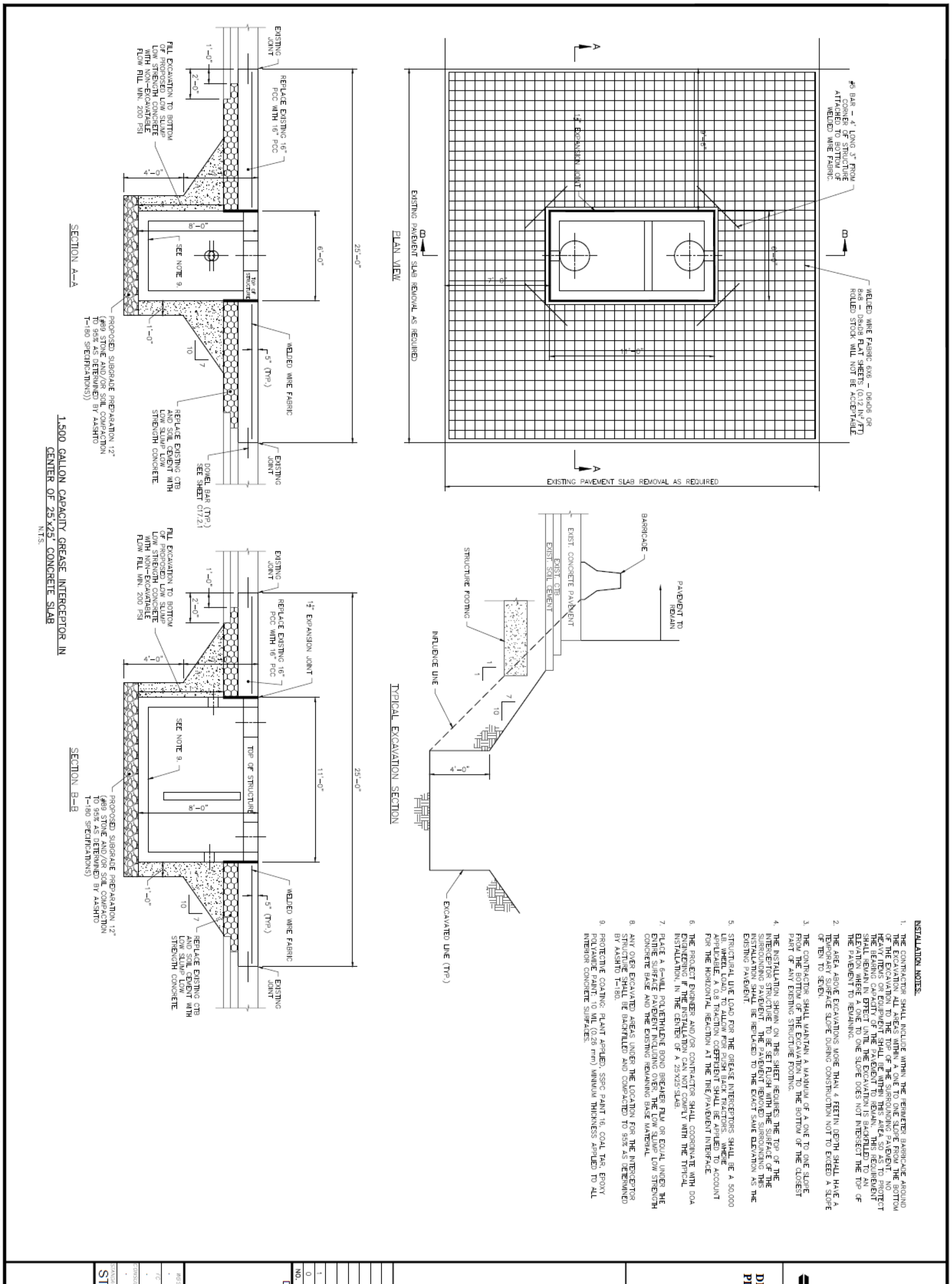

PROPERTY SINGLE SWING GATE
N.T.S.
GATE POST PIPE
STRETCHER BAR
BRACE PIPE (TYP.)
3 STRAND GALV. STEEL BARBED WIRE
9 GA. GALV. STEEL CHAIN LINK FABRIC WITH 2" MESH
PROPERTY SINGLE SWING GATE WITH BARRIER
N.T.S.
CONCRETE BARRIER
INSTALL TENSION BAR BOLTS ANCHORED INTO CONC.
HINGED KEY BOX SURFACE MOUNT FOR GATES
N.T.S.
SPACE FOR HINGED KEY BOX
CHAIN LINK FABRIC
HINGED DOOR SURFACE MOUNTED KEY BOX
N.T.S.
PROFILE VIEW
DOOR
DOOR HINGE
FENCE POST
LARGE WASHER
INSIDE VIEW
MOUNTING HOLES (TYP.)
PROPERTY DOUBLE SWING GATE
N.T.S.
GATE POST
CHAIN LINK FABRIC
GATE OPENING AS SPECIFIED
GATE FRAME INTERIOR MEMBER (TYP.)
PLUNGER BAR WITH CATCH
3 STRANDS OF BARBED WIRE
PROPERTY DOUBLE SWING GATE WITH BARRIER WALL
N.T.S.
CONCRETE BARRIER WALL
THREE STRANDS BARBED WIRE
NOTE TO DESIGNER: ALL FENCING DETAILS SHALL INCLUDE OR REFERENCE FENCING NOTES ON STD-03-200.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
Chain Link Fences - 3
STD-03-202
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS

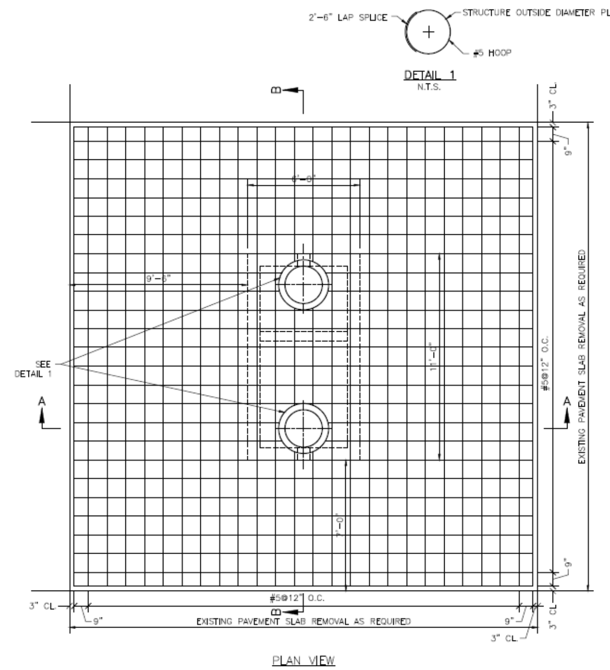

SIDA FENCE
N.T.S.
SIDA FENCE WITHOUT BARRIER/SIDA FENCE WITH BARRIER INTERSECTION
N.T.S.
TYPICAL SECTION SIDA FENCE A-A
N.T.S.
FENCE INSTALLATION ON EXISTING CONCRETE BARRIER
N.T.S.
TEMPORARY SIDA FENCE
N.T.S.
AIRSIDE SIDA
PUBLIC SIDE
GROUND LEVEL
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
NOTE TO DESIGNER: ALL FENCING DETAILS ARE TO BE USED WITH FENCING NOTES ON STD-03-200.
Chain Link Fences -4
STD-03-203
DOA CIVIL STANDARD DETAILS
NOT RELEASED FOR CONSTRUCTION

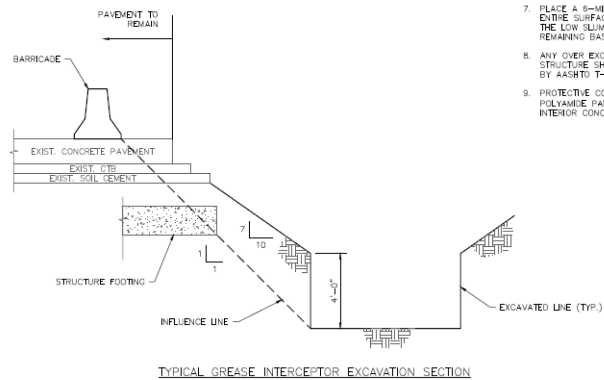

SIDA SINGLE SWING GATE WITH BARRIER
N.T.S.
SECTION A–A TYPICAL SIDA SWING GATES POST
PUBLIC SIDE OF FENCE
AIRSIDE SIDA
SIDA DOUBLE SWING GATE WITH BARRIER
N.T.S.
NOTE TO DESIGNER: ALL FENCING DETAILS SHALL INCLUDE OR REFERENCE FENCING NOTES ON STD-03-200.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
Chain Link Fences - 5
STD-03-204
NOT RELEASED FOR CONSTRUCTION


POST TOP
DOMED
NOM HEIGHT (H)
7'-0" (6'+1")
8'-0" (7'+1")
9'-0" (8'+1")
OPENING
6'-0" THROUGH 22'-0"
INSIDE
OUTSIDE
TO OPEN
OPENING
1/2 OPENING
GATE PLAN
(NOT TO SCALE)
FABRIC AREA
OVERHANG (OMIT FABRIC)
18" DIA SINGLE LOOP BARBED WIRE
(3) STRANDS OF BARBED WIRE EA CONSISTING OF 2 STRAND LINE WIRE W/ 4 PT BARBS
2" SQ ALUM UPRIGHT
1'-1"
KEEPER
TRUSS ROD
2" SQ ALUM BOTTOM RAIL
4" OD POST
1 1/2" SQ ALUM INT UPRIGHT
CHAIN LINK FABRIC
TENSION ROD
POST TOP
2" SQ B/W ARM TYP
FRAME HT
GUIDE ROLLER ASS'Y
3" NOM
TRUCK ASS'Y
ALUM TRACK/RAIL
2" SQ ALUM UPRIGHT
NOTES:
1. FOOTING WIDTH TO BE (4)X POST WIDTH MIN DEPTH TO BE 36".
2. GATES MAY BE MANUALLY OR ELECTRICALLY OPERATED. HARDWARE WILL VARY FOR ELECTRICALLY OPERATED GATES.
3. SOME DIMENSIONS MAY VARY. THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT SHOP DRAWINGS AND RECEIVE APPROVAL PRIOR TO INSTALLATION.
4. FOR PROPERTY GATE USAGE OMIT SINGLE LOOP BARBED WIRE
SINGLE CANTILEVERED SLIDING GATE
ROUND POSTS W/ BARBED WIRE
N.T.S
TRUCK BRACKET
TRUCK ASS'Y
NYLON GUIDE ROLLER W/ OILITE BEARING
TRUCK ASSEMBLY
TRUCK BRKT
BOTTOM GATE FRAME MEMBER
TOP TRACK/FRAME MEMBER OF GATE FRAME
POST
U-BOLT
ALUM TRACK/FRAME MEMBER
5 1/2"
2" SQ GATE FRAME MEMBER
LOWER GUIDE ROLLER ASS'Y
12" MAX
UPPER GUIDE ROLLER ASSEMBLY
END VIEW
UPPER & LOWER GUIDE ROLLER ASSEMBLY ATTACHED TO POST & GATE
ELEVATION
UPPER & LOWER GUIDE ROLLER ASSEMBLY(S) ATTACHED TO POST
CANTILEVERED SLIDING GATE
DETAILS
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
NO. DATE BY REVISION
0 06/2018 RFM FIRST ISSUE
1 08/2018 RFM REVISED
DOA CIVIL STANDARD DETAILS
Chain Link Fences - 6
STD-03-205
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS
q:\taskfiles\engineering\cadd library\doa standard details\details\std-03-205 chain link fences - 6.dwg


DANGER
PROTECTED BY RAZOR WIRE AND BARBED WIRE DO NOT ATTEMPT TO CLIMB
12"
18"
SIDA DANGER SIGN DETAIL
SIGN TO BE PLACED APPROX. 10' FROM SIDA WARNING SIGN WHICH IS PLACED EVERY 200 FEET.
NO TRESSPASSING AIRPORT AUTHORIZED PERSONNEL ONLY UNAUTHORIZED PERSONNEL SUBJECT TO PROSECUTION GA CODE 16-7-21
1.5" RADIUS CORNERS
SCREENED RED LETTERING & BORDER
WHITE REFLECTIVE BACKGROUND
.080 ALUMINUM
36in
3in
4in
SIDA FENCE WARNING SIGN DETAIL
NOTE: TO BE PLACED EVERY 200 FEET ON SIDA ADJACENT FENCING.
DO NOT DRIVE THROUGH THIS GATE UNTIL FULLY OPEN. ENSURE THAT GATE CLOSES BEFORE YOU EXIT THE AREA.
24in
30in
1/2in
1 1/8in typ.
2in typ.
AUTOMATIC SIDA GATE WARNING SIGN DETAIL
GATE
110
BLACK REFLECTIVE BACKGROUND
WHITE LETTERING
BLACK LETTERING
WHITE REFLECTIVE BACKGROUND
18"
12"
6"
5"
3"
GATE SIGN DETAIL
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
1 08/2018 RFM REVISED
0 MM/DD/YY RFM FIRST ISSUE
NO. DATE BY REVISION
DOA CIVIL STANDARD DETAILS
Chain Link Fence - Signage
STANDARD SHEET NUMBER STD-03-206
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS

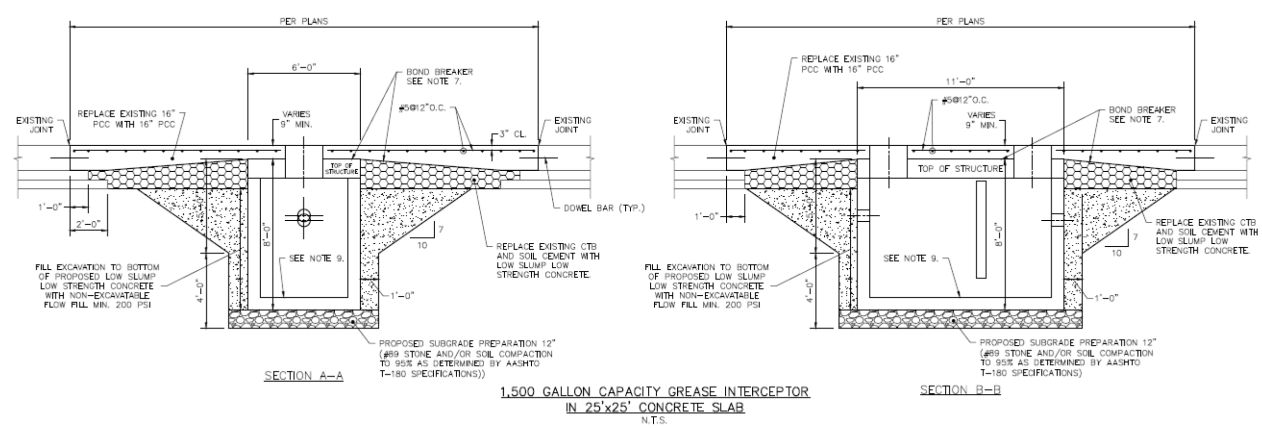

INSTALLATION NOTES:
1. THE CONTRACTOR SHALL INCLUDE WITHIN THE PERIMETER BARRICADE AROUND THE EXCAVATION ALL AREAS WITHIN A ONE TO ONE SLOPE FROM THE BOTTOM OF THE EXCAVATION TO THE TOP OF THE SURROUNDING PAVEMENT. NO HEAVY ITEMS OR EQUIPMENT SHALL BE WITHIN THIS AREA SO AS TO PROTECT THE BEARING CAPACITY OF THE PAVEMENT TO REMAIN. THIS REQUIREMENT SHALL REMAIN IN EFFECT UNTIL THE EXCAVATION IS BACKFILLED TO AN ELEVATION WHERE A ONE TO ONE SLOPE DOES NOT INTERSECT THE TOP OF THE PAVEMENT TO REMAINING.
2. THE AREA ABOVE EXCAVATIONS MORE THAN 4 FEETIN DEPTH SHALL HAVE A TEMPORARY SURFACE SLOPE DURING CONSTRUCTION NOT TO EXCEED A SLOPE OF TEN TO SEVEN.
3. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM OF A ONE TO ONE SLOPE FROM THE BOTTOM OF THE EXCAVATION TO THE BOTTOM OF THE CLOSEST PART OF ANY EXISTING STRUCTURE FOOTING.
4. THE INSTALLATION SHOWN ON THIS SHEET REQUIRES THE TOP OF THE INTERCEPTOR STRUCTURE TO BE SET FLUSH WITH THE SURFACE OF THE SURROUNDING PAVEMENT. THE PAVEMENT REMOVED SURROUNDING THIS INSTALLATION SHALL BE REPLACED TO THE EXACT SAME ELEVATION AS THE EXISTING PAVEMENT.
5. STRUCTURAL LIVE LOAD FOR THE GREASE INTERCEPTORS SHALL BE A 50,000 LB. WHEEL LOAD, TO ALLOW FOR PUSH BACK TRACTORS. WHERE APPLICABLE, A 0.8 TRACTION COEFFICIENT SHALL BE APPLIED TO ACCOUNT FOR THE HORIZONTAL REACTION AT THE TIRE/PAVEMENT INTERFACE.
6. THE PROJECT ENGINEER AND/OR CONTRACTOR SHALL COORDINATE WITH DOA ENGINEERING IF THE INSTALLATION CAN NOT COMPLY WITH THE TYPICAL INSTALLATION, IN THE CENTER OF A 25'X25' SLAB.
7. PLACE A 6-MILL POLYETHYLENE BOND BREAKER FILM OR EQUAL UNDER THE ENTIRE SURFACE PAVEMENT INCLUDING OVER, THE LOW SLUMP LOW STRENGTH CONCRETE BASE AND THE EXISTING REMAINING BASE MATERIAL.
8. ANY OVER EXCAVATED AREAS UNDER THE LOCATION FOR THE INTERCEPTOR STRUCTURE SHALL BE BACKFILLED AND COMPACTED TO 95% AS DETERMINED BY AASHTO T-180.
9. PROTECTIVE COATING: PLANT APPLIED, SSPC PAINT 16, COAL TAR, EPOXY POLYAMIDE PAINT; 10 MIL (0.26 mm) MINIMUM THICKNESS APPLIED TO ALL INTERIOR CONCRETE SURFACES.
PLAN VIEW
TYPICAL EXCAVATION SECTION
SECTION A-A
SECTION B-B
1,500 GALLON CAPACITY GREASE INTERCEPTOR IN CENTER OF 25'x25' CONCRETE SLAB
N.T.S.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson
Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
Typical Grease Interceptor Installation (Top Of Interceptor Flush With Pavement Surface, Designed For Tug Loading) - Case 1
STD-03-300
NOT RELEASED FOR CONSTRUCTION





INSTALLATION NOTES:

1. THE CONTRACTOR SHALL INCLUDE WITHIN THE PERIMETER BARRICADE AROUND THE EXCAVATION ALL AREAS WITHIN A ONE TO ONE SLOPE FROM THE BOTTOM OF THE EXCAVATION TO THE TOP OF THE SURROUNDING PAVEMENT. NO HEAVY ITEMS OR EQUIPMENT SHALL BE WITHIN THIS AREA SO AS TO PROTECT THE BEARING CAPACITY OF THE PAVEMENT TO REMAIN. THIS REQUIREMENT SHALL REMAIN IN EFFECT UNTIL THE EXCAVATION IS BACKFILLED TO AN ELEVATION WHERE A ONE TO ONE SLOPE DOES NOT INTERSECT THE TOP OF THE PAVEMENT TO REMAINING.
2. THE AREA ABOVE EXCAVATIONS MORE THAN 4 FEETIN DEPTH SHALL HAVE A TEMPORARY SURFACE SLOPE DURING CONSTRUCTION NOT TO EXCEED A SLOPE OF TEN TO SEVEN.
3. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM OF A ONE TO ONE SLOPE FROM THE BOTTOM OF THE EXCAVATION TO THE BOTTOM OF THE CLOSEST PART OF ANY EXISTING STRUCTURE FOOTING.
4. THE PAVEMENT REMOVED SURROUNDING THIS INSTALLATION SHALL BE REPLACED TO THE EXACT SAME ELEVATION AS THE EXISTING PAVEMENT.
5. STRUCTURAL LIVE LOAD FOR THE GREASE INTERCEPTORS SHALL BE A 50,000 LB. WHEEL LOAD, TO ALLOW FOR PUSH BACK TRACTORS. WHERE APPLICABLE, A 0.8 TRACTION COEFFICIENT SHALL BE APPLIED TO ACCOUNT FOR THE HORIZONTAL REACTION AT THE TIRE/PAVEMENT INTERFACE.
6. THE PROJECT ENGINEER AND/OR CONTRACTOR SHALL COORDINATE WITH DOA ENGINEERING IF THE INSTALLATION CAN NOT COMPLY WITH THE TYPICAL INSTALLATION, IN THE CENTER OF A 25'X25' SLAB.
7. PLACE A 6-MILL POLYETHYLENE BOND BREAKER FILM OR EQUAL UNDER THE ENTIRE SURFACE PAVEMENT INCLUDING OVER THE INTERCEPTOR STRUCTURE, THE LOW SLUMP LOW STRENGTH CONCRETE BASE AND THE EXISTING REMAINING BASE MATERIAL.
8. ANY OVER EXCAVATED AREAS UNDER THE LOCATION FOR THE INTERCEPTOR STRUCTURE SHALL BE BACKFILLED AND COMPACTED TO 95% AS DETERMINED BY AASHTO T-180.
9. PROTECTIVE COATING: PLANT APPLIED, SSPC PAINT 16, COAL TAR, EPOXY POLYAMIDE PAINT; 10 MIL (0.26 mm) MINIMUM THICKNESS APPLIED TO ALL INTERIOR CONCRETE SURFACES.



CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport

DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT

NO.	DATE	BY	REVISION
1	08/2019	RFM	REVISED
0	06/20/2014	RFM	FIRST ISSUE

DOA CIVIL STANDARD DETAILS
Typical Grease Interceptor Installation (Top Of Interceptor Below Pavement, Designed For Tug Loading) - Case 2

WBS NUMBER: -	DRAWN BY: STAFF
FC NUMBER: -	DESIGNED BY: STAFF
CONSULTANT PROJECT NUMBER: -	CHECKED BY: STAFF
STANDARD SHEET NUMBER: STD-03-301	APPROVED BY: STAFF
	DATE: -
	SCALE:
	SHEET NO: -

DOA CIVIL STANDARD DETAILS

NOT RELEASED FOR CONSTRUCTION

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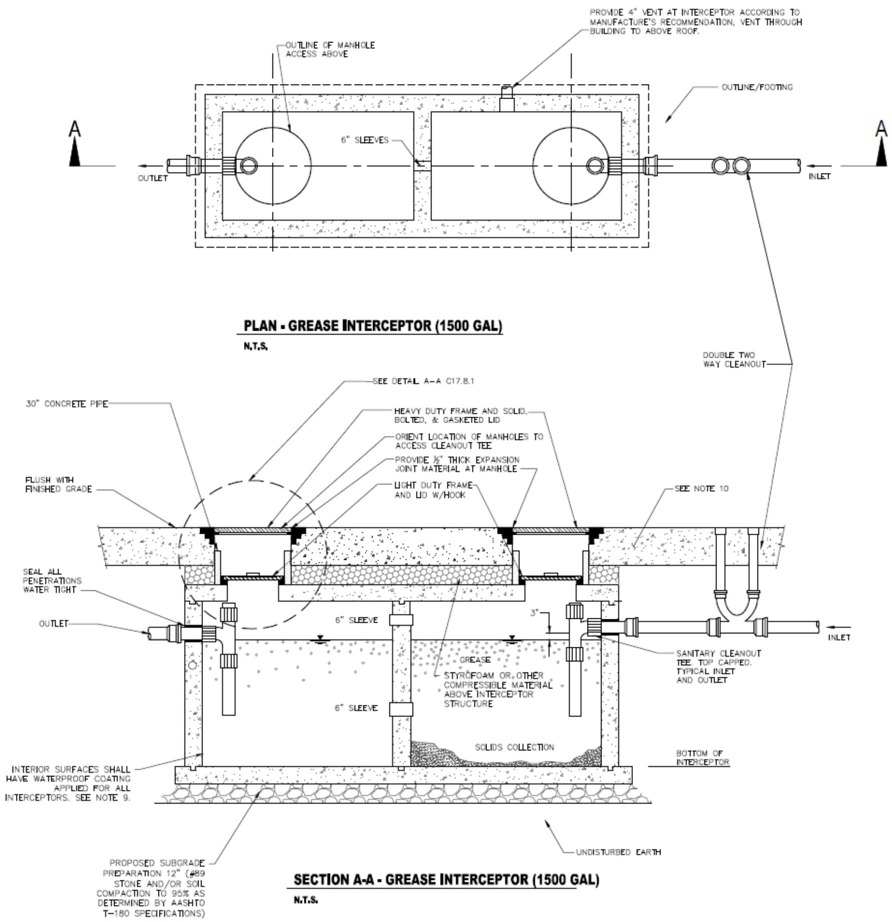


INSTALLATION NOTES:

1. SEE SHEET C17.5.1 FOR EXCAVATING AND BACKFILLING FOR FOR INSTALLATION OF GREASE INTERCEPTOR.
2. THE AREA ABOVE EXCAVATIONS MORE THAN 4'IN DEPTH SHALL HAVE A TEMPORARY SURFACE SLOPE DURING CONSTRUCTION NOT TO EXCEED A SLOPE OF TEN TO SEVEN.
3. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM OF A ONE TO ONE SLOPE FROM THE BOTTOM OF THE EXCAVATION TO THE BOTTOM OF THE CLOSEST PART OF ANY EXISTING STRUCTURE FOOTING.
4. THE PAVEMENT REMOVED SURROUNDING THIS INSTALLATION SHALL BE REPLACED TO THE EXACT SAME ELEVATION AS THE EXISTING PAVEMENT.
5. STRUCTURAL LIVE LOAD FOR THE GREASE INTERCEPTORS SHALL BE A MINIMUM H-20 WHEEL LOAD.
6. THE PROJECT ENGINEER AND/OR CONTRACTOR SHALL COORDINATE WITH DOA ENGINEERING IF THE INSTALLATION CAN NOT COMPLY WITH THE TYPICAL INSTALLATION, IN THE CENTER OF A 25'X25'SLAB, AS SHOWN ON SHEET C17.5.1.
7. PLACE A 6-MILL POLYETHYLENE BOND BREAKER FILM OR EQUAL UNDER THE ENTIRE SURFACE PAVEMENT INCLUDING OVER, THE LOW SLUMP LOW STRENGTH CONCRETE BASE AND THE EXISTING REMAINING BASE MATERIAL.
8. ANY OVER EXCAVATED AREAS UNDER THE LOCATION FOR THE INTERCEPTOR STRUCTURE SHALL BE BACKFILLED AND COMPACTED TO 95% AS DETERMINED BY AASHTO T-180.
9. PROTECTIVE COATING: PLANT APPLIED, SSPC PAINT 16, COAL TAR, EPOXY POLYAMIDE PAINT; 10 MIL (0.26 mm) MINIMUM THICKNESS APPLIED TO ALL INTERIOR CONCRETE SURFACES.
10. SEE SHEET C17.8.1 FOR BRIDGING PAVEMENT SLAB TYPICAL LAYOUT.

STRUCTURAL DESIGN CRITERIA:

1. THESE DESIGN CRITERIA APPLY WHERE THE PROPOSED INSTALLATION IS IN AN APRON AREA THAT IS NOT SUBJECT TO AIRCRAFT LOADS. STRUCTURES SUBJECT TO AIRCRAFT LOADS SHALL BE DESIGNED IN ACCORDANCE WITH APPENDIX 3 OF FAA ADVISORY CIRCULAR AC 150/5320-6E.
2. STRUCTURAL DESIGN SHALL BE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION.
3. THE DESIGN LIVE LOAD SHALL BE EQUIVALENT TO AN H-62.5 TRUCK WITHOUT ALLOWANCE FOR IMPACT.

CITY OF ATLANTA, GEORGIA

Hartsfield-Jackson
Atlanta International Airport

DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT

NO.	DATE	BY	REVISION
1	08/2019	RFM	REVISED
0	8/20/2014	RFM	FIRST ISSUE

DOA CIVIL STANDARD DETAILS

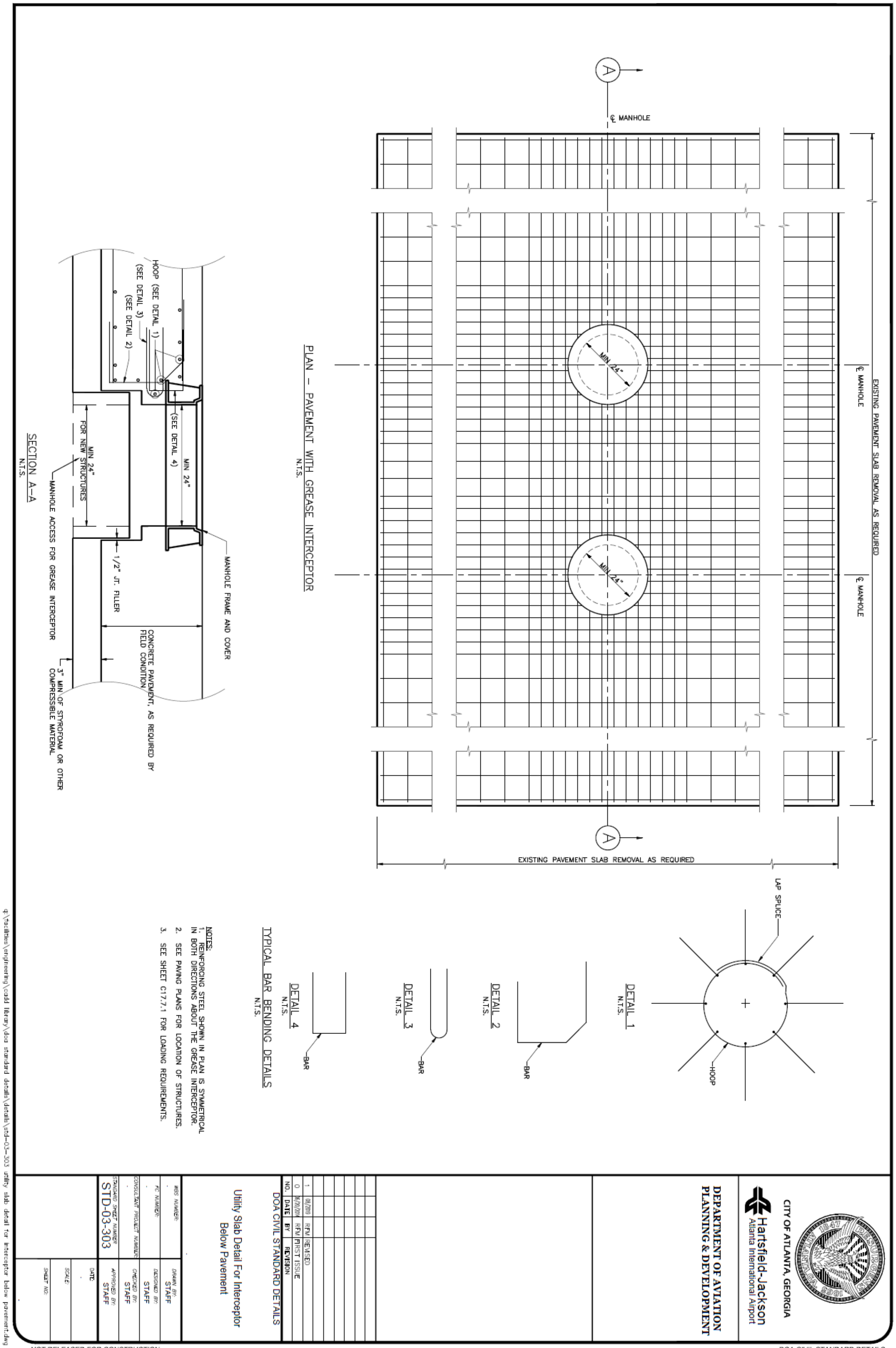
Below Pavement Grease Interceptor Details (Interceptor Not Designed For Tug Loading) - Case 3

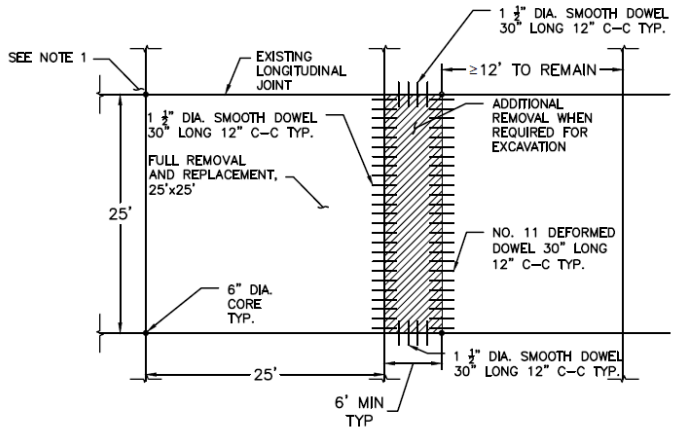
WBS NUMBER: -	DRAWN BY: STAFF
FC NUMBER: -	DESIGNED BY: STAFF
CONSULTANT PROJECT NUMBER: -	CHECKED BY: STAFF
STANDARD SHEET NUMBER: STD-03-302	APPROVED BY: STAFF
	DATE: -
	SCALE:
	SHEET NO: -

DOA CIVIL STANDARD DETAILS

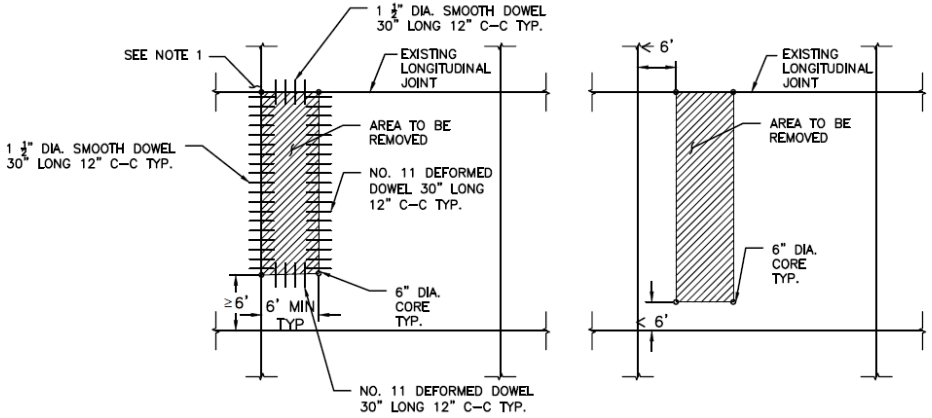
NOT RELEASED FOR CONSTRUCTION

q:\facilities\engineering\cadd library\doa standard details\details\std-03-302 below pavement grease interceptor details.dwg


PLAN — PAVEMENT WITH GREASE INTERCEPTOR
N.T.S.
℄ MANHOLE
MIN 24"
EXISTING PAVEMENT SLAB REMOVAL AS REQUIRED
SECTION A–A
N.T.S.
HOOP (SEE DETAIL 1)
(SEE DETAIL 3)
(SEE DETAIL 2)
(SEE DETAIL 4)
MIN 24" FOR NEW STRUCTURES
MANHOLE ACCESS FOR GREASE INTERCEPTOR
1/2" JT. FILLER
MANHOLE FRAME AND COVER
CONCRETE PAVEMENT, AS REQUIRED BY FIELD CONDITION
3" MIN OF STYROFOAM OR OTHER COMPRESSIBLE MATERIAL
LAP SPLICE
HOOP
DETAIL 1
N.T.S.
DETAIL 2
N.T.S.
DETAIL 3
N.T.S.
DETAIL 4
N.T.S.
BAR
TYPICAL BAR BENDING DETAILS
N.T.S.
NOTES:
1. REINFORCING STEEL SHOWN IN PLAN IS SYMMETRICAL IN BOTH DIRECTIONS ABOUT THE GREASE INTERCEPTOR.
2. SEE PAVING PLANS FOR LOCATION OF STRUCTURES.
3. SEE SHEET C17.7.1 FOR LOADING REQUIREMENTS.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
Utility Slab Detail For Interceptor Below Pavement
STD-03-303
NO. DATE BY REVISION
RFM REVISED
RFM FIRST ISSUE
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS



DETAIL FOR ADDITIONAL PAVEMENT REMOVAL
NTS



CASE 1
ACCEPTABLE

CASE 2
NOT ACCEPTABLE

PAVEMENT REMOVAL AND REPLACEMENT LIMITS
(USE FOR PIPE TRENCHES)
NTS

NOTES:
1. SEE DOWEL SPACING DETAIL AT JOINT CORNERS DETAIL.

2. ONLY SAWCUTS MADE ALONG EXISTING JOINT LINES MAY BE OVERCUT. OTHER SAWCUTS WILL TERMINATE IN A 6" FULL DEPTH CORE TO PREVENT DAMAGE TO THE PAVEMENT TO BE RETAINED. SEE DETAIL.

3. DOWELS ALONG EXISTING JOINTS SHALL BE 1–1/2" X 30" SMOOTH DOWELS AT 12" NOMINAL SPACING. DOWELS THAT ARE ON SAWED FACES ONLY WILL BE #11 X 30" DEFORMED DOWELS AT 12" NOMINAL CENTERS. ALL DOWELS SHALL BE INSTALLED BY DRILLING AND EPOXYING.

4. CONTRACTOR SHALL LAY OUT REMOVAL AREA AS SPECIFIED IN THESE DOCUMENTS. PRIOR TO INITIATING REMOVAL, THE CONTRACTOR SHALL RECEIVE LAYOUT APPROVAL FROM THE ENGINEER.

5. SAWCUT AND REMOVE PAVEMENT CAREFULLY SO AS NOT TO DAMAGE/SPALL REMAINING CONCRETE EDGE. SAWCUTS MAY BE LEFT IN PLACE AHEAD OF REMOVAL OPERATION.

6. EXCAVATE SOIL TO THE REQUIRED DEPTH. REMOVE ALL DISTURBED MATERIAL UNTIL A FIRM FOUNDATION IS ACHIEVED.

7. INSTALL APPROPRIATE BEDDING AND UTILITY THEN BACKFILL TO REQUIRED DEPTH.

8. INSTALL DOWELS AND REBAR.

9. SAND BLAST THE SURFACE OF THE CONCRETE TO EXPOSE ROUGH AGGREGATE. COAT SAWCUT SURFACES WITH BONDING AGENT. EXISTING JOINT FACES DO NOT REQUIRE BONDING AGENT.

10. PLACE CONCRETE LEVEL WITH THE ADJACENT SURFACE. COMPLETELY CONSOLIDATE CONCRETE, FILL ALL VOIDS BY VIBRATING.

CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport

DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT

NO.	DATE	BY	REVISION

DOA CIVIL STANDARD DETAILS

Additional Pavement Removal

WBS NUMBER: -	DRAWN BY: STAFF
FC NUMBER: -	DESIGNED BY: STAFF
CONSULTANT PROJECT NUMBER: -	CHECKED BY: STAFF
STANDARD SHEET NUMBER: STD-03-304	APPROVED BY: STAFF
	DATE: -
	SCALE: -
	SHEET NO: -

DOA CIVIL STANDARD DETAILS
NOT RELEASED FOR CONSTRUCTION

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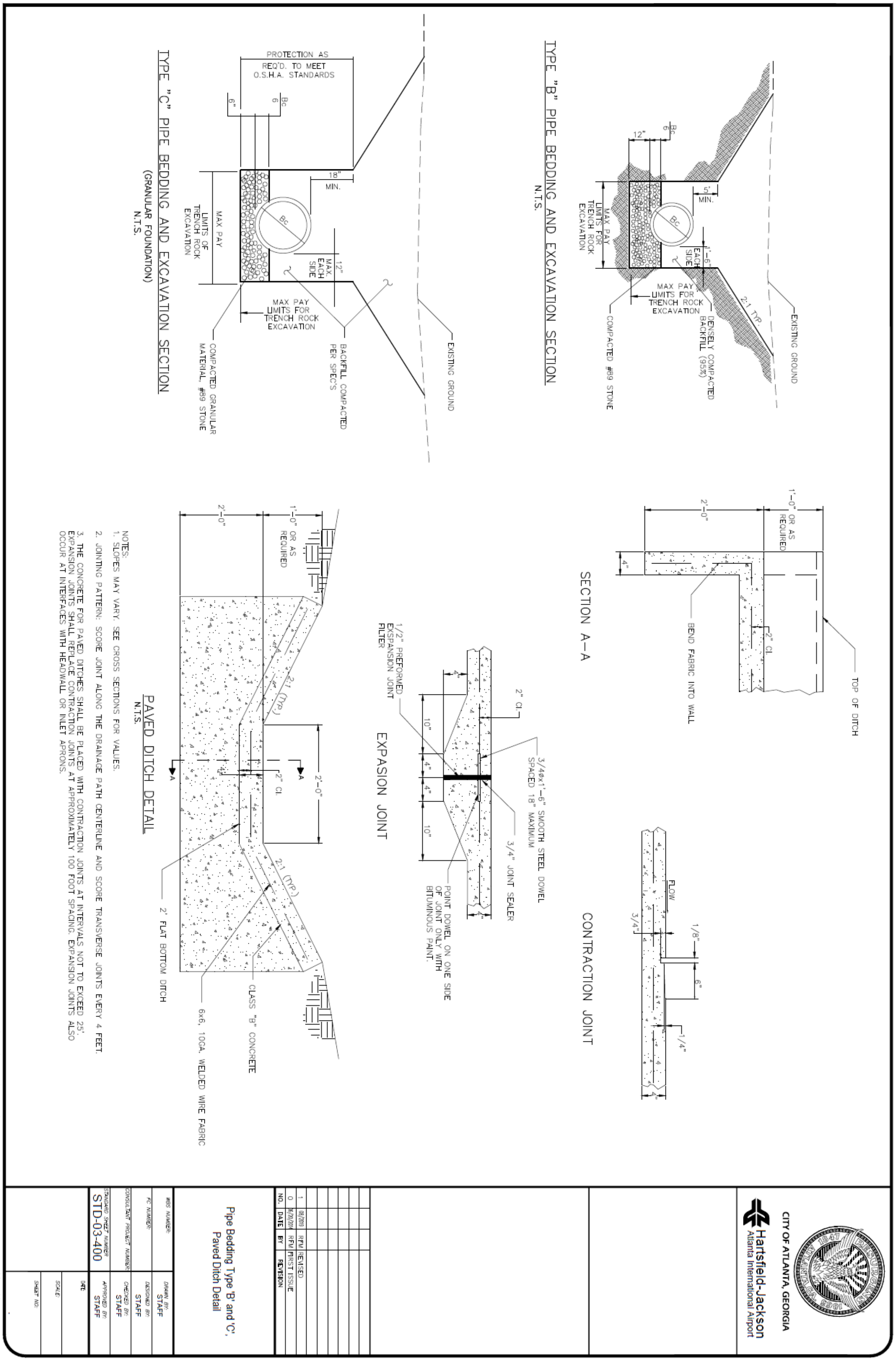
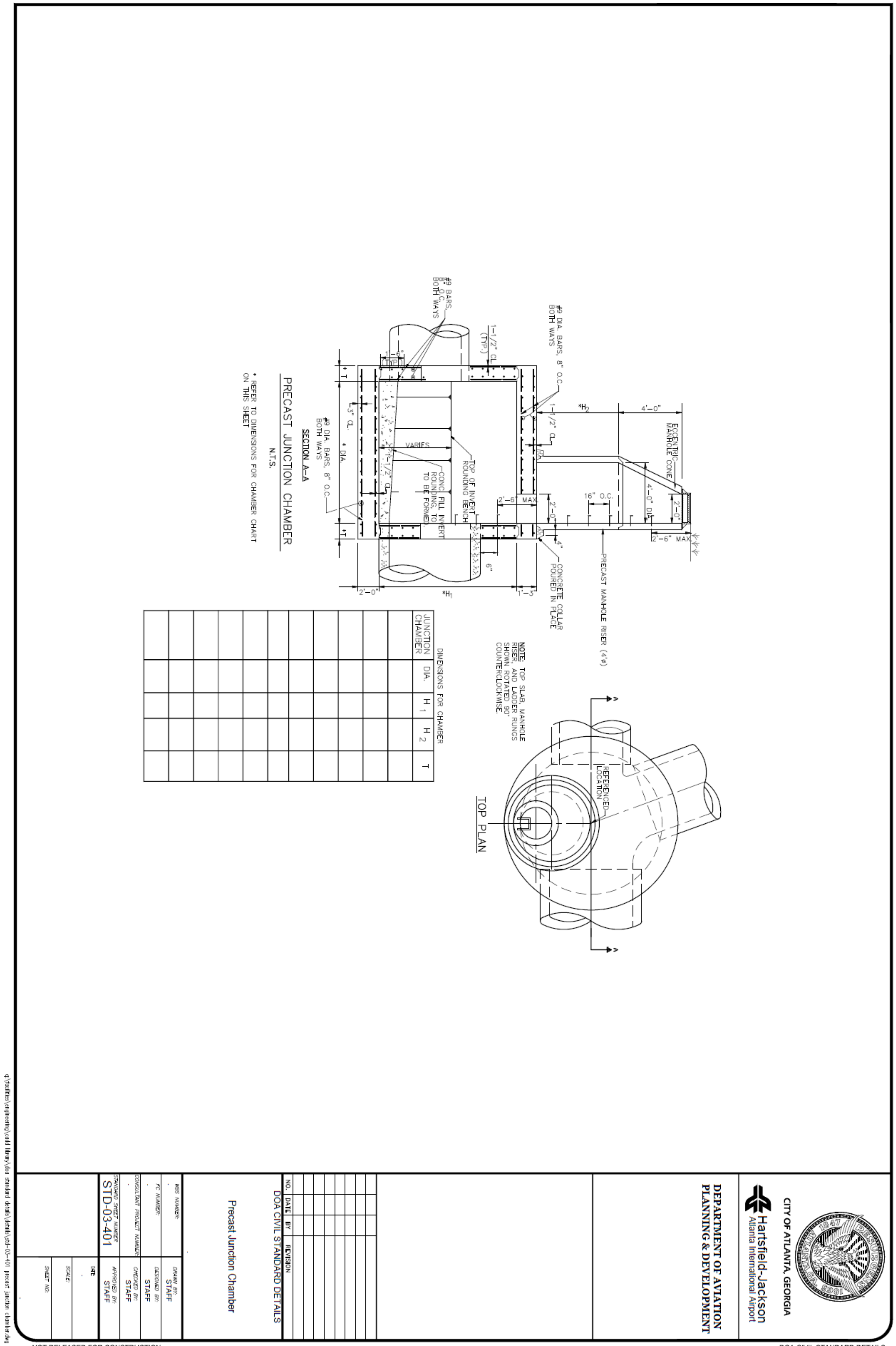
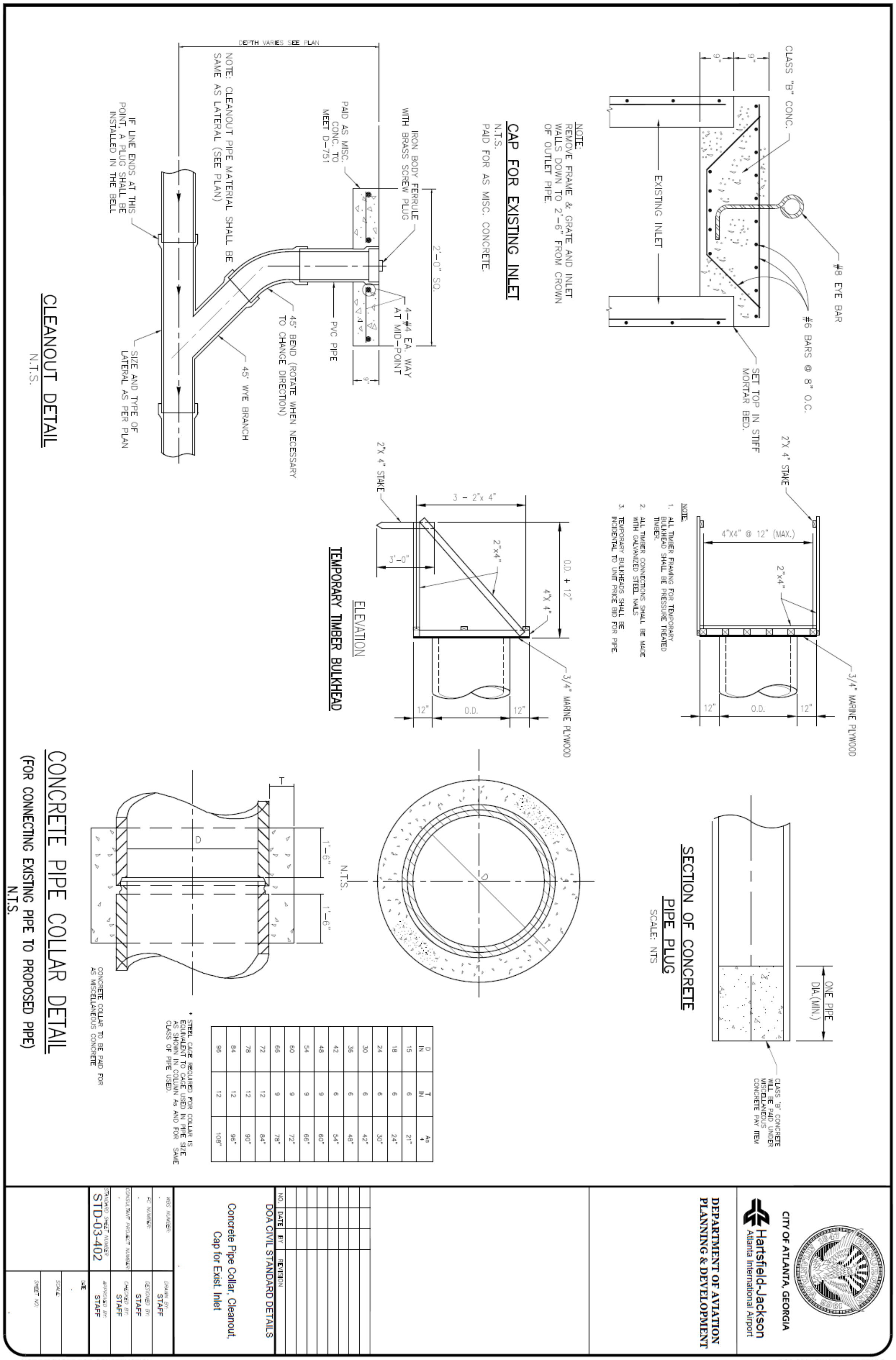
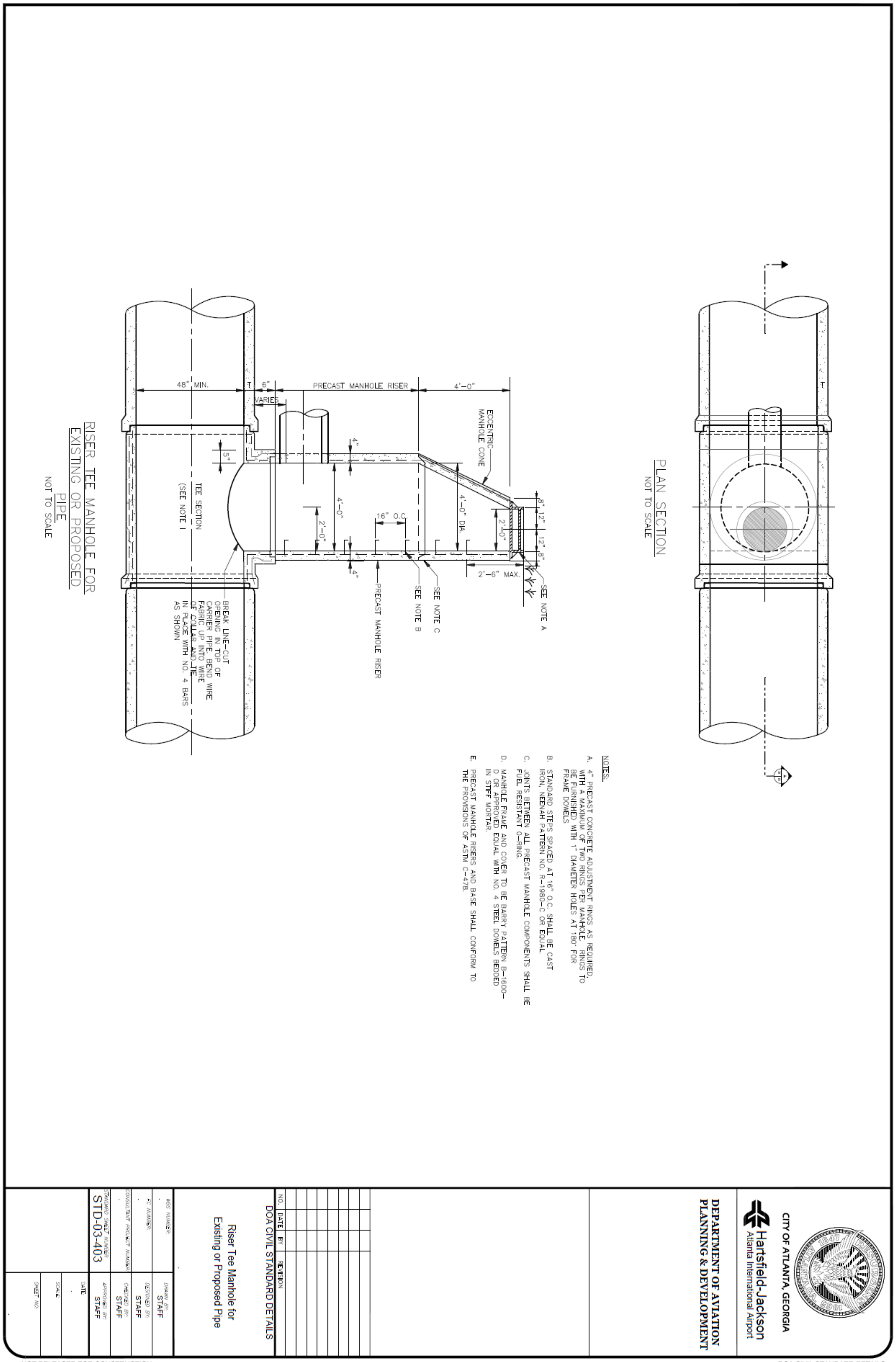

TYPE "B" PIPE BEDDING AND EXCAVATION SECTION
N.T.S.
TYPE "C" PIPE BEDDING AND EXCAVATION SECTION
(GRANULAR FOUNDATION)
N.T.S.
PROTECTION AS REQ'D. TO MEET O.S.H.A. STANDARDS
MAX PAY LIMITS FOR TRENCH ROCK EXCAVATION
EXISTING GROUND
DENSELY COMPACTED BACKFILL (95%)
COMPACTED #89 STONE
BACKFILL COMPACTED PER SPEC'S
COMPACTED GRANULAR MATERIAL #89 STONE
SECTION A–A
TOP OF DITCH
BEND FABRIC INTO WALL
EXPASION JOINT
CONTRACTION JOINT
1/2" PREFORMED EXPANSION JOINT FILTER
3/4ø×1'–6" SMOOTH STEEL DOWEL SPACED 18" MAXIMUM
3/4" JOINT SEALER
POINT DOWEL ON ONE SIDE OF JOINT ONLY WITH BITUMINOUS PAINT.
PAVED DITCH DETAIL
N.T.S.
2' FLAT BOTTOM DITCH
CLASS "B" CONCRETE
6x6, 10GA. WELDED WIRE FABRIC
NOTES:
1. SLOPES 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 DITCHES 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.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
Pipe Bedding Type 'B' and 'C', Paved Ditch Detail
STD-03-400
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
NO. DATE BY REVISION
1 RFM REVISED
0 RFM FIRST ISSUE

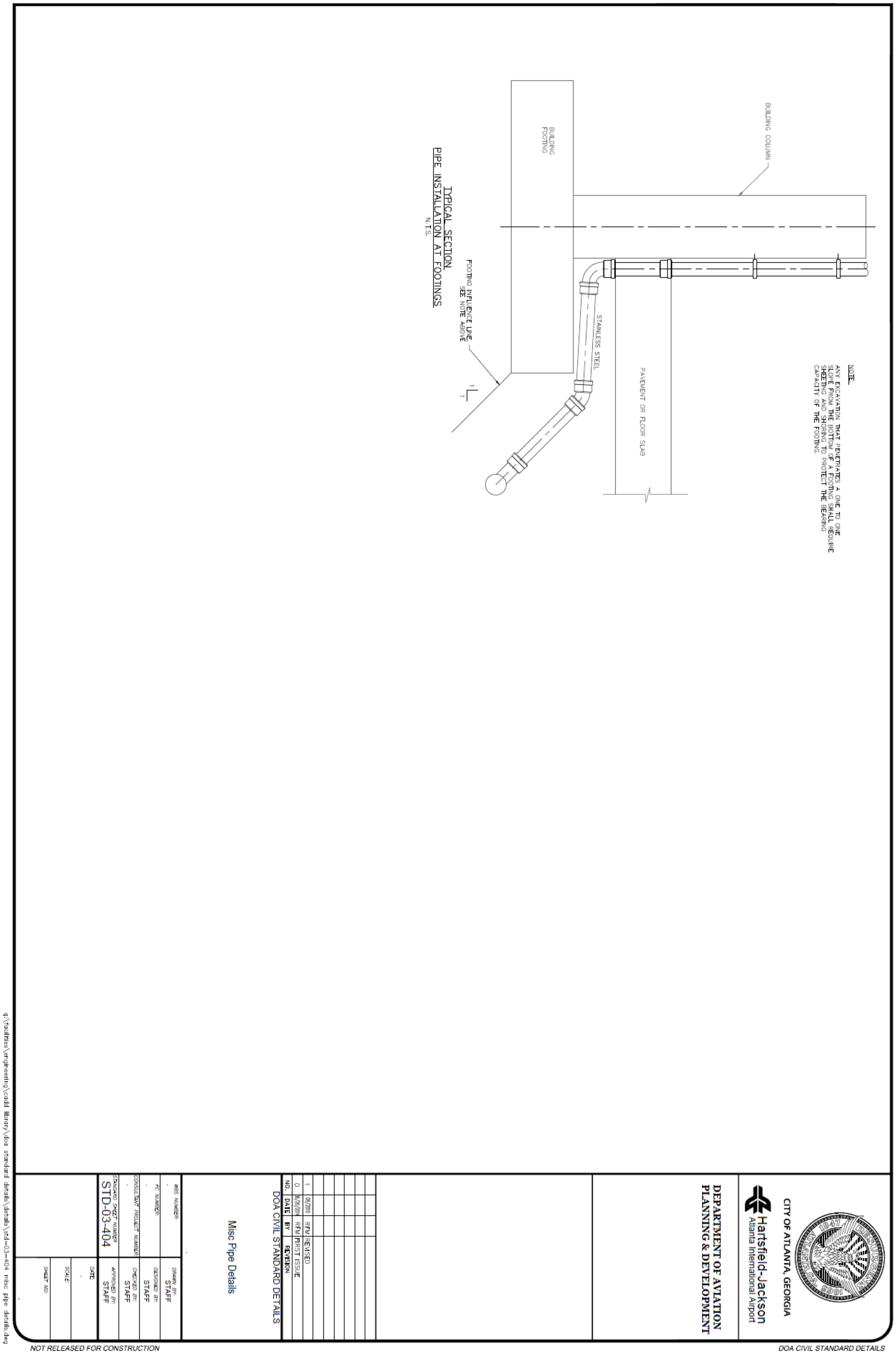

PRECAST JUNCTION CHAMBER
SECTION A-A
N.T.S.
* REFER TO DIMENSIONS FOR CHAMBER CHART ON THIS SHEET
TOP PLAN
REFERENCED LOCATION
NOTE: TOP SLAB, MANHOLE RISER, AND LADDER RUNGS SHOWN ROTATED 90° COUNTERCLOCKWISE.
ECCENTRIC MANHOLE CONE
PRECAST MANHOLE RISER (4'Ø)
CONCRETE COLLAR POURED IN PLACE
TOP OF INVERT ROUNDING BENCH
CONC. FILL INVERT ROUNDING, TO BE FORMED
#9 DIA. BARS, 8" O.C. BOTH WAYS
VARIES
16" O.C.
2'-6" MAX
DIMENSIONS FOR CHAMBER
JUNCTION CHAMBER
DIA.
H 1
H 2
T
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
Precast Junction Chamber
STD-03-401
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS

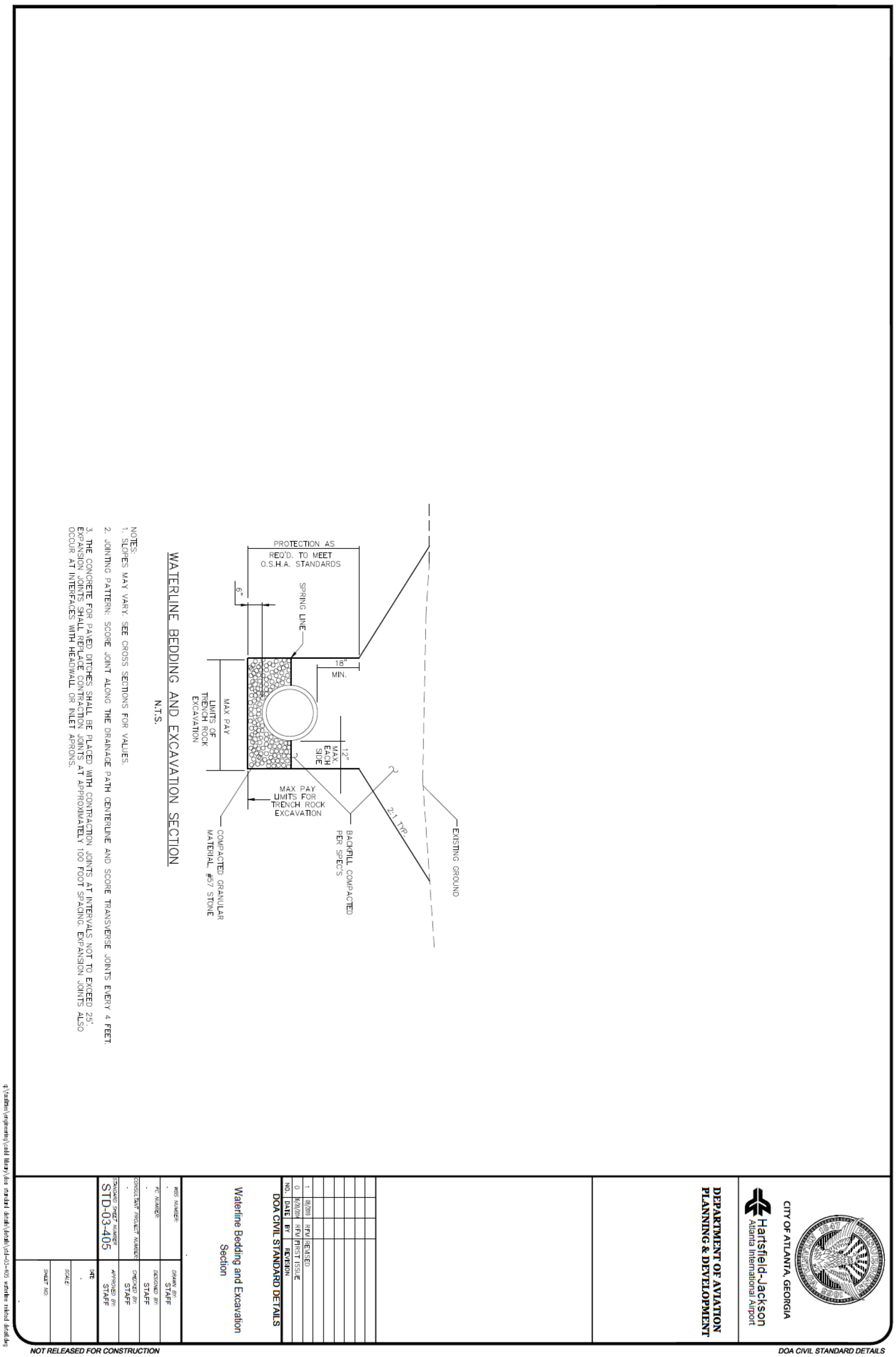

#8 EYE BAR
#6 BARS @ 8" O.C.
CLASS "B" CONC.
SET TOP IN STIFF MORTAR BED.
9"
9"
EXISTING INLET
NOTE:
REMOVE FRAME & GRATE AND INLET WALLS DOWN TO 2'-6" FROM CROWN OF OUTLET PIPE.
CAP FOR EXISTING INLET
N.T.S.
PAID FOR AS MISC. CONCRETE.
3/4" MARINE PLYWOOD
2"X 4" STAKE
2"x4"
4"X4" @ 12" (MAX.)
12"
O.D.
12"
NOTE:
1. ALL TIMBER FRAMING FOR TEMPORARY BULKHEAD SHALL BE PRESSURE TREATED TIMBER.
2. ALL TIMBER CONNECTIONS SHALL BE MADE WITH GALVANIZED STEEL NAILS
3. TEMPORARY BULKHEADS SHALL BE INCIDENTAL TO UNIT PRICE BID FOR PIPE.
O.D. + 12"
4"X 4"
3 - 2"x 4"
3'-0"
ELEVATION
TEMPORARY TIMBER BULKHEAD
ONE PIPE DIA.(MIN.)
CLASS 'B' CONCRETE WILL BE PAID UNDER MISCELLANEOUS CONCRETE PAY ITEM
SECTION OF CONCRETE PIPE PLUG
SCALE: NTS
2'-0" SQ.
IRON BODY FERRULE WITH BRASS SCREW PLUG
4-#4 EA. WAY AT MID-POINT
9"
PAID AS MISC. CONC. TO MEET D-751
PVC PIPE
DEPTH VARIES SEE PLAN
45° BEND (ROTATE WHEN NECESSARY TO CHANGE DIRECTION)
45° WYE BRANCH
NOTE: CLEANOUT PIPE MATERIAL SHALL BE SAME AS LATERAL (SEE PLAN)
IF LINE ENDS AT THIS POINT, A PLUG SHALL BE INSTALLED IN THE BELL
SIZE AND TYPE OF LATERAL AS PER PLAN
CLEANOUT DETAIL
N.T.S.
D
T
N.T.S.
1'-6"
1'-6"
CONCRETE COLLAR TO BE PAID FOR AS MISCELLANEOUS CONCRETE
CONCRETE PIPE COLLAR DETAIL
(FOR CONNECTING EXISTING PIPE TO PROPOSED PIPE)
N.T.S.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson
Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
NO. DATE BY REVISION
DOA CIVIL STANDARD DETAILS
Concrete Pipe Collar, Cleanout, Cap for Exist. Inlet
WBS NUMBER
FC NUMBER
CONSULTANT PROJECT NUMBER
STANDARD SHEET NUMBER
STD-03-402
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
DATE
SCALE
SHEET NO.
DOA CIVIL STANDARD DETAILS
NOT RELEASED FOR CONSTRUCTION

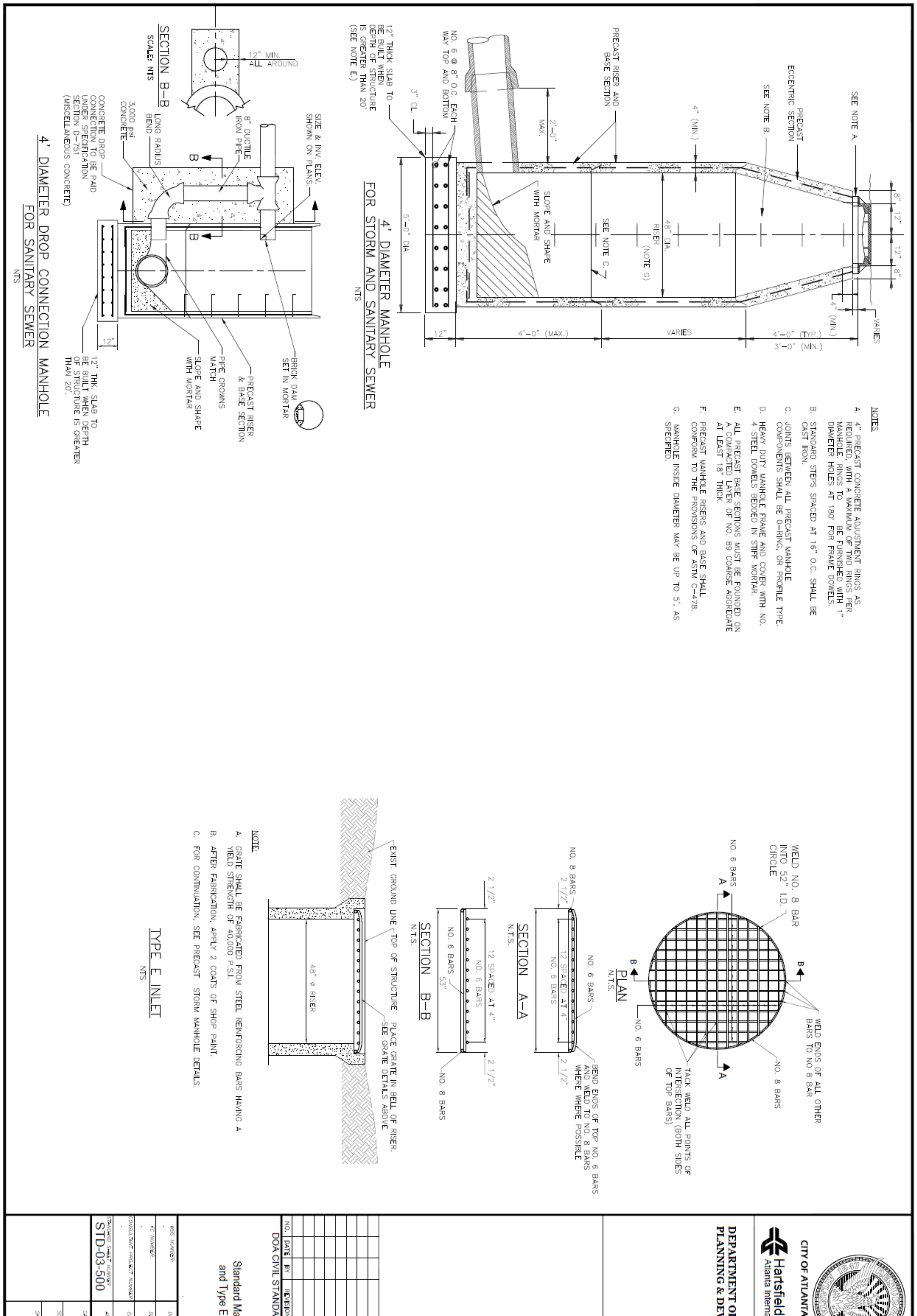
D IN	T IN	As *
15	6	21"
18	6	24"
24	6	30"
30	6	42"
36	6	48"
42	6	54"
48	9	60"
54	9	66"
60	9	72"
66	9	78"
72	12	84"
78	12	90"
84	12	96"
96	12	108"

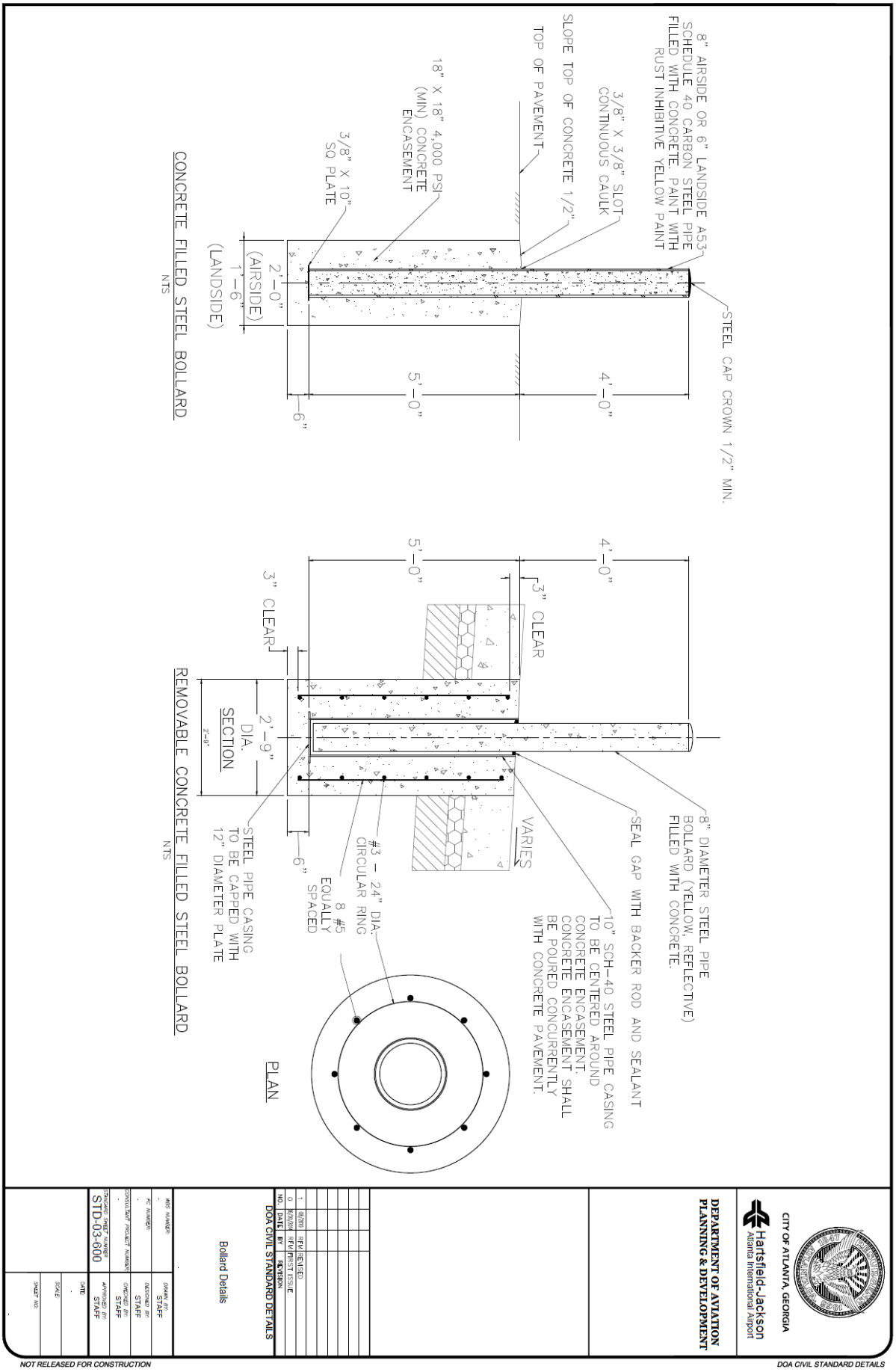
* STEEL CAGE REQUIRED FOR COLLAR IS EQUIVALENT TO CAGE USED IN PIPE SIZE AS SHOWN IN COLUMN As AND FOR SAME CLASS OF PIPE USED.

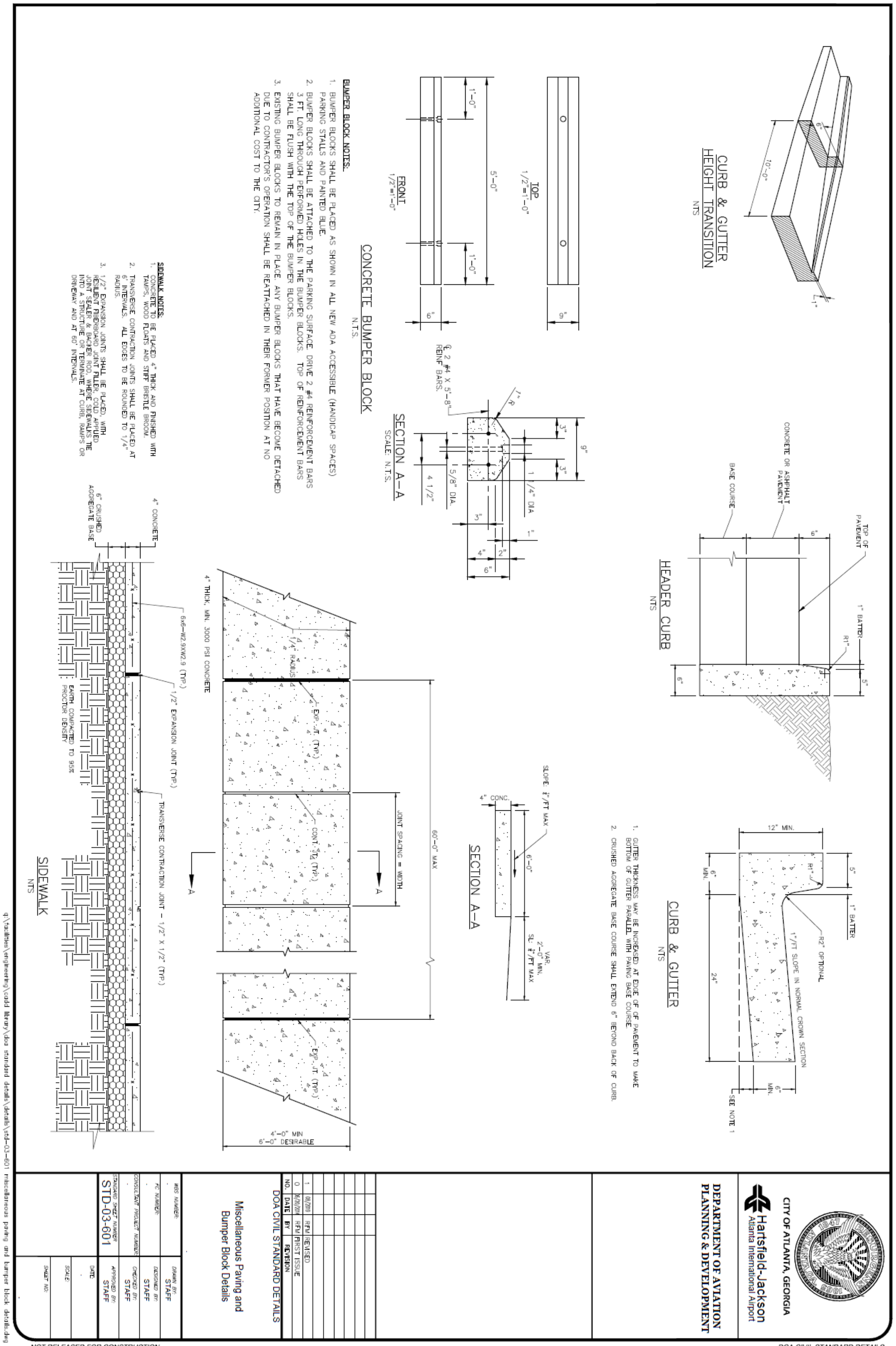

PLAN SECTION
NOT TO SCALE
NOTES:
A. 4" PRECAST CONCRETE ADJUSTMENT RINGS AS REQUIRED, WITH A MAXIMUM OF TWO RINGS PER MANHOLE. RINGS TO BE FURNISHED WITH 1" DIAMETER HOLES AT 180° FOR FRAME DOWELS
B. STANDARD STEPS SPACED AT 16" O.C. SHALL BE CAST IRON, NEENAH PATTERN NO. R-1980-C OR EQUAL.
C. JOINTS 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 DOWELS BEDDED IN STIFF MORTAR.
E. PRECAST MANHOLE RISERS AND BASE SHALL CONFORM TO THE PROVISIONS OF ASTM C-478.
SEE NOTE A
ECCENTRIC MANHOLE CONE
4'-0" DIA.
2'-6" MAX.
SEE NOTE C
SEE NOTE B
PRECAST MANHOLE RISER
16" O.C.
4'-0"
2'-0"
48" MIN.
VARIES
TEE SECTION
(SEE NOTE I
BREAK LINE-CUT OPENING IN TOP OF CARRIER PIPE. BEND WIRE FABRIC UP INTO WIRE OF COLLAR AND TIE IN PLACE WITH NO. 4 BARS AS SHOWN
RISER TEE MANHOLE FOR EXISTING OR PROPOSED PIPE
NOT TO SCALE
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson
Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
NO. DATE BY REVISION
DOA CIVIL STANDARD DETAILS
Riser Tee Manhole for
Existing or Proposed Pipe
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
STANDARD SHEET NUMBER
STD-03-403
DATE
SCALE
SHEET NO.
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS


NOTE:
ANY EXCAVATION THAT PENETRATES A ONE TO ONE SLOPE FROM THE BOTTOM OF A FOOTING SHALL REQUIRE SHEETING AND SHORING TO PROTECT THE BEARING CAPACITY OF THE FOOTING.
BUILDING COLUMN
BUILDING FOOTING
PAVEMENT OR FLOOR SLAB
STAINLESS STEEL
FOOTING INFLUENCE LINE SEE NOTE ABOVE
TYPICAL SECTION
PIPE INSTALLATION AT FOOTINGS
N.T.S.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson
Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
NO. DATE BY REVISION
1 08/2019 RFM REVISED
0 RFM FIRST ISSUE
DOA CIVIL STANDARD DETAILS
Misc Pipe Details
WBS NUMBER:
FC NUMBER:
CONSULTANT PROJECT NUMBER:
STANDARD SHEET NUMBER
STD-03-404
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
DATE:
SCALE:
SHEET NO.
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS


EXISTING GROUND
2:1 TYP.
BACKFILL COMPACTED PER SPEC'S
PROTECTION AS REQ'D. TO MEET O.S.H.A. STANDARDS
18" MIN.
12" MAX. EACH SIDE
SPRING LINE
MAX PAY LIMITS FOR TRENCH ROCK EXCAVATION
6"
MAX PAY LIMITS OF TRENCH ROCK EXCAVATION
COMPACTED GRANULAR MATERIAL, #57 STONE
WATERLINE BEDDING AND EXCAVATION SECTION
N.T.S.
NOTES:
1. SLOPES 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 DITCHES 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.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson
Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
1 08/2019 RFM REVISED
0 06/20/2014 RFM FIRST ISSUE
NO. DATE BY REVISION
DOA CIVIL STANDARD DETAILS
Waterline Bedding and Excavation Section
WBS NUMBER: -
FC NUMBER: -
CONSULTANT PROJECT NUMBER: -
STANDARD SHEET NUMBER STD-03-405
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
DATE: -
SCALE:
SHEET NO:
DOA CIVIL STANDARD DETAILS
NOT RELEASED FOR CONSTRUCTION


4' DIAMETER MANHOLE FOR STORM AND SANITARY SEWER
NTS
4' DIAMETER DROP CONNECTION MANHOLE FOR SANITARY SEWER
NTS
SECTION B-B
SCALE: NTS
NOTES
A. 4" PRECAST CONCRETE ADJUSTMENT RINGS AS REQUIRED, WITH A MAXIMUM OF TWO RINGS PER MANHOLE. RINGS TO BE FURNISHED WITH 1" DIAMETER HOLES AT 180° FOR FRAME DOWELS.
B. STANDARD STEPS SPACED AT 16" O.C. SHALL BE CAST IRON.
C. JOINTS BETWEEN ALL PRECAST MANHOLE COMPONENTS SHALL BE O-RING, OR PROFILE TYPE
D. HEAVY DUTY MANHOLE FRAME AND COVER WITH NO. 4 STEEL DOWELS BEDDED IN STIFF MORTAR.
E. ALL PRECAST BASE SECTIONS MUST BE FOUNDED ON A COMPACTED LAYER OF NO. 89 COARSE AGGREGATE AT LEAST 18" THICK.
F. PRECAST MANHOLE RISERS AND BASE SHALL CONFORM TO THE PROVISIONS OF ASTM C-478.
G. MANHOLE INSIDE DIAMETER MAY BE UP TO 5', AS SPECIFIED.
PLAN
N.T.S.
SECTION A-A
N.T.S.
SECTION B-B
N.T.S.
NOTE:
A. GRATE SHALL BE FABRICATED FROM STEEL REINFORCING BARS HAVING A YIELD STRENGTH OF 40,000 P.S.I.
B. AFTER FABRICATION, APPLY 2 COATS OF SHOP PAINT.
C. FOR CONTINUATION, SEE PRECAST STORM MANHOLE DETAILS.
TYPE E INLET
NTS
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
Standard Manhole and Type E Inlet
STD-03-500
STAFF
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS


8" AIRSIDE OR 6" LANDSIDE A53 SCHEDULE 40 CARBON STEEL PIPE FILLED WITH CONCRETE. PAINT WITH RUST INHIBITIVE YELLOW PAINT
3/8" X 3/8" SLOT CONTINUOUS CAULK
SLOPE TOP OF CONCRETE 1/2"
TOP OF PAVEMENT
18" X 18" 4,000 PSI (MIN) CONCRETE ENCASEMENT
3/8" X 10" SQ PLATE
STEEL CAP CROWN 1/2" MIN.
2'-0" (AIRSIDE)
1'-6" (LANDSIDE)
4'-0"
5'-0"
6"
CONCRETE FILLED STEEL BOLLARD
NTS
3" CLEAR
2'-9" DIA.
SECTION
REMOVABLE CONCRETE FILLED STEEL BOLLARD
NTS
STEEL PIPE CASING TO BE CAPPED WITH 12" DIAMETER PLATE
#3 - 24" DIA. CIRCULAR RING
8 #5 EQUALLY SPACED
VARIES
PLAN
8" DIAMETER STEEL PIPE BOLLARD (YELLOW, REFLECTIVE) FILLED WITH CONCRETE.
SEAL GAP WITH BACKER ROD AND SEALANT
10" SCH-40 STEEL PIPE CASING TO BE CENTERED AROUND CONCRETE ENCASEMENT. CONCRETE ENCASEMENT SHALL BE POURED CONCURRENTLY WITH CONCRETE PAVEMENT.
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION
PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
NO. DATE BY REVISION
0 MO/YR RFM RELEASED FOR FIRST ISSUE
1 MO/YR RFM REVISED
Bollard Details
STANDARD SHEET NUMBER
STD-03-600
DRAWN BY: STAFF
DESIGNED BY: STAFF
CHECKED BY: STAFF
APPROVED BY: STAFF
DATE:
SCALE:
SHEET NO.:
NOT RELEASED FOR CONSTRUCTION
DOA CIVIL STANDARD DETAILS
q:\Kaufman\engineering\civil library\doa standard details\details\std-03-600 bollard details.dwg


CURB & GUTTER HEIGHT TRANSITION
HEADER CURB
CURB & GUTTER
CONCRETE BUMPER BLOCK
SECTION A-A
SIDEWALK
CITY OF ATLANTA, GEORGIA
Hartsfield-Jackson Atlanta International Airport
DEPARTMENT OF AVIATION PLANNING & DEVELOPMENT
DOA CIVIL STANDARD DETAILS
Miscellaneous Paving and Bumper Block Details
STD-03-601
NOT RELEASED FOR CONSTRUCTION

Hartsfield-Jackson Atlanta International Airport

City of Atlanta

Department of Aviation

Office of Infrastructure Planning & Development

Tenant
New Construction and Modifications

Design Standards

Structural

Design Standards
Structural

Table of Contents

Design Standards
Structural

1.0 Purpose

A. The purpose of this document is to outline the minimum structural engineering requirements for new construction and/or modifications related to Tenant submitted projects at the City of Atlanta's Hartsfield-Jackson Atlanta International Airport (ATL).

2.0 General

All design work shall be performed in accordance with generally accepted professional principles and practices for structural engineering and in compliance with all applicable Department of Aviation Design Standards, Federal, State and City of Atlanta Design Codes, Standards and Regulations.

A. Modifying Existing Structures

1. The installation or relocation of heavy equipment shall be evaluated and endorsed by a Structural Engineer.
2. Proposed improvements that require partial or complete, severing, altering or removal of structural members shall require evaluation and design by a Structural Engineer.
3. Walls proposed for partial or full demolition shall be evaluated by a Structural Engineer to determine whether they are load bearing. If they are, drawings shall indicate the sequence of operations required to avoid collapse.
4. Modifications to existing structures shall not be made without prior approval by the Department of Aviation.

B. Floor, Wall and Roof Penetrations

1. Proposed penetrations and openings for existing floors, walls, and roofs shall be located where there are no impacts to existing concrete reinforcements. Contractor shall be required to locate existing reinforcements prior to commencing coring operations.
2. If reinforcements must be severed due to the size of the opening or its required location, evaluation and design shall be made by a Structural Engineer.
3. Proposed rectangular openings in existing walls, floor slabs and roof shall be detailed with required core holes of sufficient diameter at each corner to prevent over cut upon installation.
4. Tenant shall be responsible for reinstating any existing wall, floor and roof penetrations and/or openings in the space, which are to be abandoned (See Architectural Standards for penetration repair details)

C. Design Calculations

1. Basis-of-design calculations shall be prepared for any project that propose modification to an existing joist, beam, column or foundation, and shall demonstrate (the airport's satisfaction) that designed alterations do not degrade overall structural capacity to resist code prescribed loads.
2. Calculations shall be neatly presented and include sketches proportioned to reflect relative scale, illustrating design intent. Provide linkage in the calculations for all primary structural members proposed. All commercial computer software utilized in the production of the design shall be identified by name and version. All input files and corresponding output files (in native format), shall be recorded to DVD/CD optical media, suitably labeled and included with the submittal.

3. Any in-house proprietary computer software utilized in the design shall have the solution of verification problems documented in the appendix.

4. All final calculations shall be sealed, signed, and dated by the Structural Engineer of Record.

D. Loads and Loading Combinations

1. Load combinations used for the design/modification of airport structures shall be in strict compliance with the requirements of the applicable provisions of ASCE/SEI 7-16, Minimum Design Loads for Buildings and Other Structures (current printing) and the structural codes identified in the general requirement section above.

E. Foundation Systems

1. Where applicable, foundation designs shall be based on the recommendations of a Georgia registered geotechnical engineer unless the structural support demand is deemed to be of minor significance and with the concurrence of the Department of Aviation.

F. Drawings

1. All structural drawing packages shall include at a minimum, the following sheets in addition to other sheets that are necessary to depict the work of the project.

   a. General Notes – General notes applicable to the overall design and structural materials proposed, abbreviations used within the structural drawings, symbol legend(s) as appropriate. The general notes shall include all the information required by section 1603 of the IBC 2018.

   b. Demolition plans shall be prepared for all projects that propose new slab or other structural member penetrations. Proposed and existing slab penetrations shall be identified on the demolition plan indicating sizes and spatial relationships to known points on the floor plan.

   c. Penetrations for roof-mounted equipment shall be supported by supplementary members designed by a Georgia structural engineer, unless it is demonstrated by calculation, to the airport's satisfaction, that supplemental members are not required.

G. Specifications

1. Specifications defining the quality of workmanship and materials to be incorporated into the work shall be prepared as a separate document or placed on the structural drawings.

Hartsfield-Jackson Atlanta International Airport

City of Atlanta
Department of Aviation
Office of Infrastructure Planning & Development

Tenant New Construction and Modifications

Design Standards

Architectural

Design Standards
Architectural

Table of Contents

Design Standards Architectural

1.0 Purpose

The purpose of this document is to outline the minimum Architectural requirements for New Construction and/or Modifications related to Tenant submitted projects at the City of Atlanta's Hartsfield-Jackson Atlanta International Airport (ATL).

2.0 General

A. Applicable Codes and Standards

1. All design work shall be performed in accordance with generally accepted professional principles and practices for Architectural Design and in compliance with all applicable Federal, State and City of Atlanta Design Codes, Standards and Regulations and the Department of Aviation (DOA), Planning & Development Bureau (P&D) Design and Construction Standards for Concessions New Construction and Modifications.
2. Where there may be conflicting requirements in the codes, standards and regulations, the most stringent provision, as determined by P&D shall be applied.

B. Existing Space Requirements

1. Modifying Existing Structures
    a. Proposed space modifications shall comply with the standards included in this manual, Sections 2 through 8.
2. New Floor, Wall and Roof Penetrations
    a. Proposed penetrations and/or openings for existing floors, walls, and roofs shall comply with the Structural Design Standards, Section 4 of this manual.
3. Repair of Existing Floor and Roof Penetrations
    a. Repair/filling of existing cores and/or openings for Concrete Floors, Concrete Floors on Steel Deck, Steel Deck Roof, and Concrete on Steel Deck Roof and Concrete Deck Roof shall comply with Details No.1 through No. 6 (Attached as part of these standards).
4. Temporary Construction Walls
    a. Temporary construction walls shall be full height (to underside of finished ceiling).
    b. Walls shall be constructed of metal studs with gypsum wall board, on the public side, and be attached to the existing floor. The gypsum board shall be painted and shall include finished baseboard (colors to be selected by Owner).
    c. Any damage to existing base building finishes shall be repaired by Tenant at no cost to the Owner.
5. Existing Ceilings
    a. Replacement, demolition and/or removal of existing ceiling(s) and associated lighting and mechanical systems above public (lease) spaces, ticketing, hold rooms, baggage claim, seating and circulation areas shall include the removal of all abandoned hangers, supports, electrical feeds, mechanical ducts and/or other appurtenant items above the ceiling.
    b. Re-attach /Replace any missing junction box covers.

6. Floor Mounted Appurtenances

    a. Any appurtenances such as luggage carts, luggage cart dispensing equipment, wheelchairs, wheelchair corrals, seating, advertisement, corporate signage, directories, self-service kiosks and any other floor mounted equipment throughout the airport's interior and exterior public facilities, shall not be a safety hazard to public circulation, obstruct passenger flow or impede any emergency path of travel or exit. Locations shall be submitted to the DOA /P&D for review and acceptance.

3.0 Design

A. General

1. Design shall incorporate good design practices that match and/or enhance existing conditions.

    a. Existing base building finishes outside a Tenant's lease line (Horizontal and Vertical) shall be maintained

    b. Tenant is responsible for correcting any damage to existing base building finishes caused by the construction work

    c. Tenant is responsible for ensuring that all building service tie-ins to existing base building infrastructure meet DOA Design and Construction Standards

    d. All materials and finishes used shall be of equal or higher quality to existing base building finishes

    e. Additions or modifications that impact or interface with existing Terminal roof systems shall be compatible with in-place roof systems and conditions. The ATL standard roofing system is a single-ply membrane fully adhered (Per Manufacture's Specification) 135 mil Fleece back TPO roofing system (80 mil w/55 mil Fleece back) over new insulation with heat welded TPO sheet seams

    f. Penetrations of existing CPTC Roof

        Installer must utilize and maintain all Atlanta Airlines Terminal Corporation (AATC) required approvals and shut down requests criteria including roof warranty approvals during satellite antenna installation.

    g. Designers shall incorporate good design practices including, but not limited to:

        i. Sustainable design **(Please see Section 3, Sustainability Design Standards)**

        ii. Adaptability

        iii. Healthy design (air quality)

        iv. Utilize materials native to the region when possible

        v. Utilize materials that are permanent, high quality and durable

        vi. Design for energy efficiency

4.0 Appendices

A. Appendix No. 1

Detail No.1 Concrete on Steel Deck Floor Repair

Detail No.2 Concrete Floor Repair

Detail No.3 Steel Deck Roof Repair

Detail No.4 Concrete on Steel Deck Roof Repair

Detail No.5 Concrete Deck Roof Repair

Detail No.6 Pipe Thru System over Conc. On Steel Deck

Detail No.7 Pipe Thru Roofing System over Steel Deck

Detail No.8 Pipe Thru Roofing System over Conc. Slab

Detail No.9 Satellite Mast and Pad on Conc. Slab

Detail No.10 Satellite Mast on Concrete

Detail No.11 Satellite Mast on Metal Deck

Detail No. 12 Expansion Joint Detail

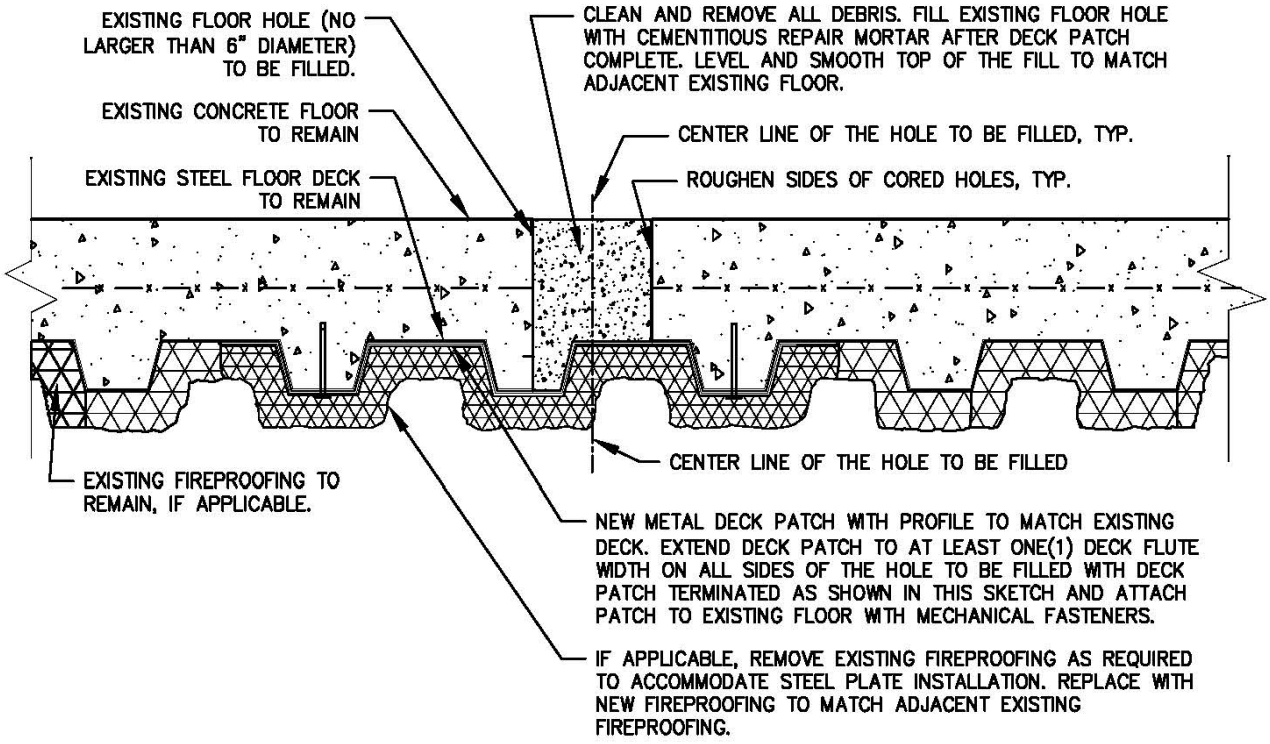
Detail No.1 Concrete on Steel Deck Floor Repair

Requirements for Filling Penetrations in Existing Elevated Concrete Slabs

Proposed filling of cores or openings in existing elevated concrete slabs shall be evaluated by a Georgia registered structural design professional, who shall provide stamped requirements in the construction documents whenever either:

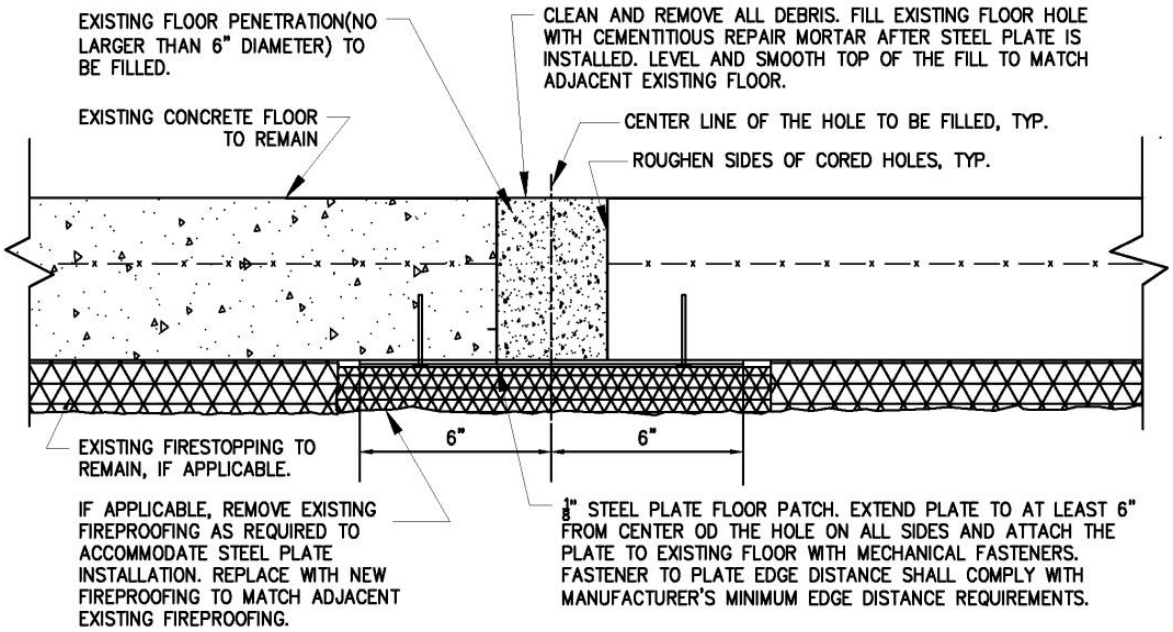
1. The clear spacing of adjacent cores or openings will be less than 3 inches; or
2. The core or opening is proposed for a concrete floor reinforced with prestressed reinforcement; or
3. The greatest dimension for the opening or core proposed exceeds 6 inches.

Cores or openings in concrete slabs, for which none of the above restrictions are applicable, shall be reinstated with a cementitious repair mortar in accordance with the manufacturer's written instructions for preparation, mixing, placement, finishing and curing. Also, see detail below for more information.



PROJECT: ELEVATED FLOOR REPAIR FOR OPENING 6" OR LESS			SKETCH NO.
DRAWING NAME: CONCRETE ON STEEL DECK FLOOR REPAIR		Hartsfield-Jackson Atlanta International Airport	1
REVISIONS	DESCRIPTION OF REVISION	DRAWN BY: CM	REFERENCE DWG. NO.
No.		DESIGNED BY: CM	
No.		CHECKED BY: CHECK	
No.		CONTRACT: NONE	NONE
No.		WBS: NONE	
No.		SCALE: NTS	
		DATE: 08/20/2013	

Detail No.2 Concrete Floor Repair

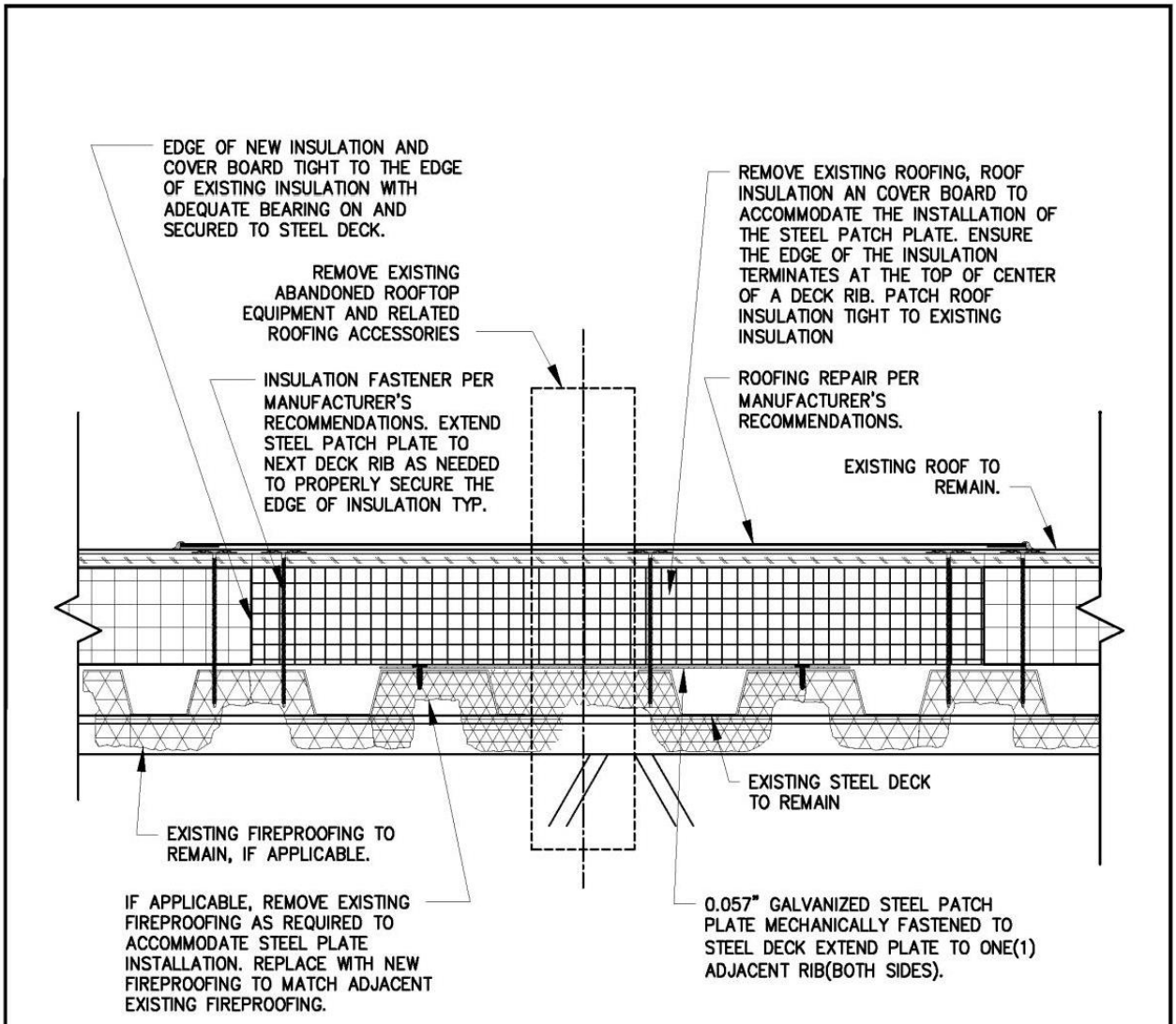


NOTES:

1. Proposed filling of new and existing cores and/or openings that fall under the following conditions shall be evaluated, engineered and stamped by a Structural Design Professional registered in the State of Georgia. :
   1.1 Penetrations larger than 6 inches; or
   1.2 The clear spacing of adjacent penetrations is less than 3 inches; or
   1.3 The concrete floor if reinforced with pre-stressed reinforcement.

PROJECT: ELEVATED FLOOR PENETRATION REPAIR DETAIL			DETAIL NO.
DRAWING NAME: CONCRETE FLOOR REPAIR		Hartsfield-Jackson Atlanta International Airport	2
REVISIONS	DESCRIPTION OF REVISION	DRAWN BY: CM	REFERENCE DWG. NO.
No.		DESIGNED BY: CM	
No.		CHECKED BY: CHECK	
No.		CONTRACT: NONE	NONE
No.		WBS: NONE	
No.		SCALE: NTS	
No.		DATE: 03/26/2014	

Detail No.3 Steel Deck Roof Repair

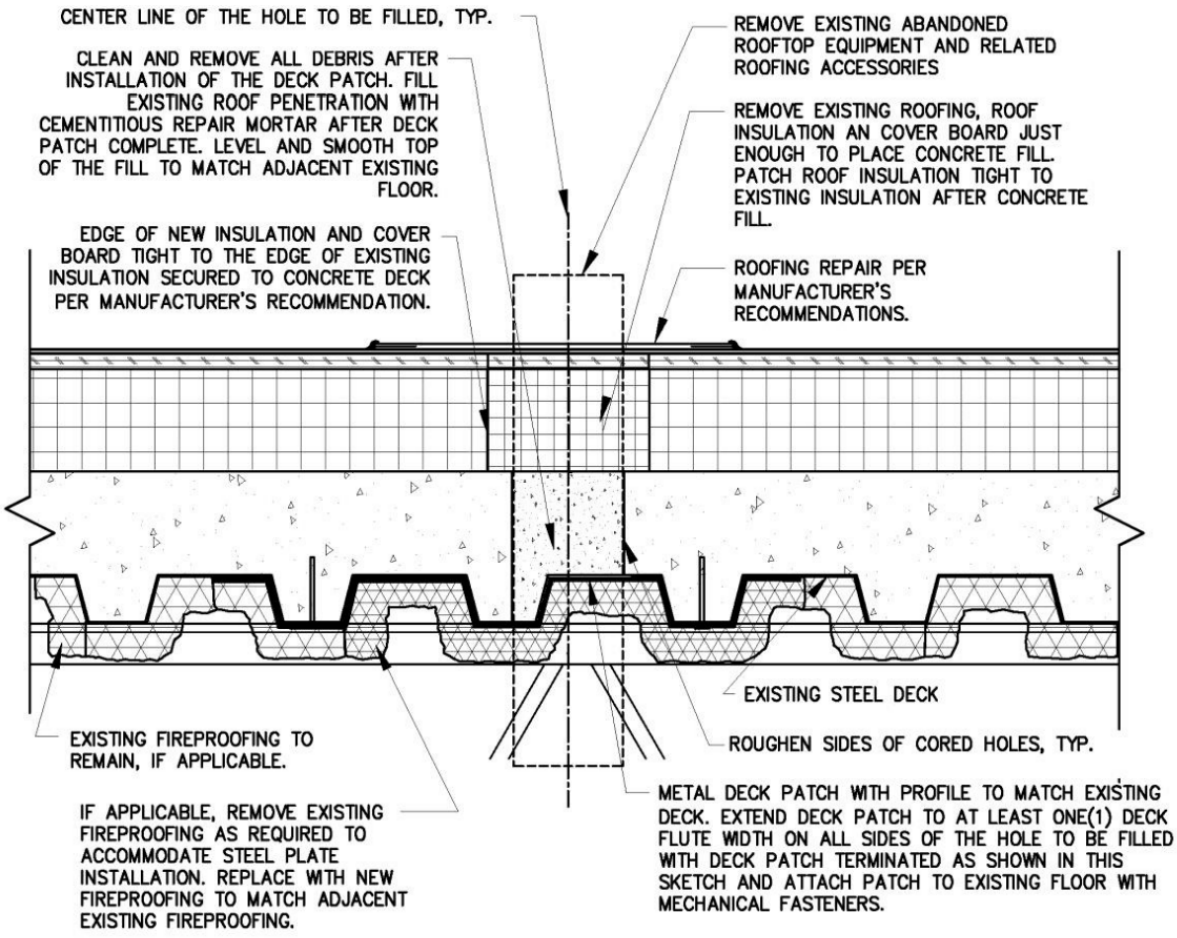


NOTES:

Proposed filling of new and existing penetrations larger than 13 inches shall be evaluated, engineered and stamped by a Structural Design Professional registered in the State of Georgia.

PROJECT: ROOF PENETRATION REPAIR DETAIL			DETAIL NO.
DRAWING NAME: STEEL DECK ROOF REPAIR		Hartsfield-Jackson Atlanta International Airport	3
REVISIONS	DESCRIPTION OF REVISION	DRAWN BY: CM	REFERENCE DWG. NO.
No.		DESIGNED BY: CM	
No.		CHECKED BY: CHECK	
No.		CONTRACT: NONE	NONE
No.		WBS: NONE	
No.		SCALE: NTS	
		DATE: 03/26/2014	

Detail No.4 Concrete on Steel Deck Roof Repair

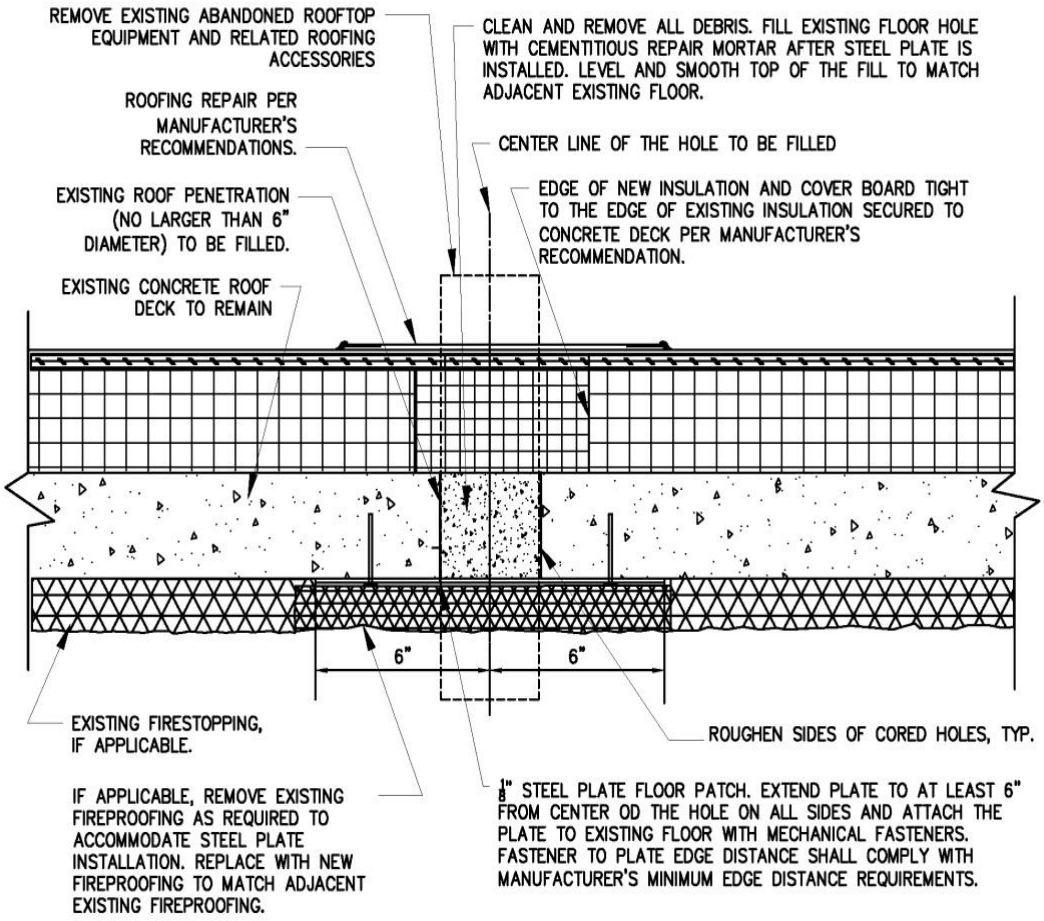


NOTES:

1. Proposed filling of new and existing cores and /or openings that fall under the following conditions shall be evaluated, engineered and stamped by a structural design professional registered in the State of Georgia: who shall provide stamped requirements in the construction documents whenever either:
   1.1 Penetration larger than 6 inches; or
   1.2 The clear spacing of adjacent penetrations is less than 3 inches.

PROJECT: ROOF PENETRATION REPAIR DETAIL			DETAIL NO.
DRAWING NAME: CONCRETE ON STEEL DECK ROOF REPAIR		Hartsfield-Jackson Atlanta International Airport	4
REVISIONS	DESCRIPTION OF REVISION	DRAWN BY: CM	REFERENCE DWG. NO.
No.		DESIGNED BY: CM	
No.		CHECKED BY: CHECK	
No.		CONTRACT: NONE	NONE
No.		WBS: NONE	
No.		SCALE: NTS	
No.		DATE: 03/26/2014	

Detail No.5 Concrete Deck Roof Repair

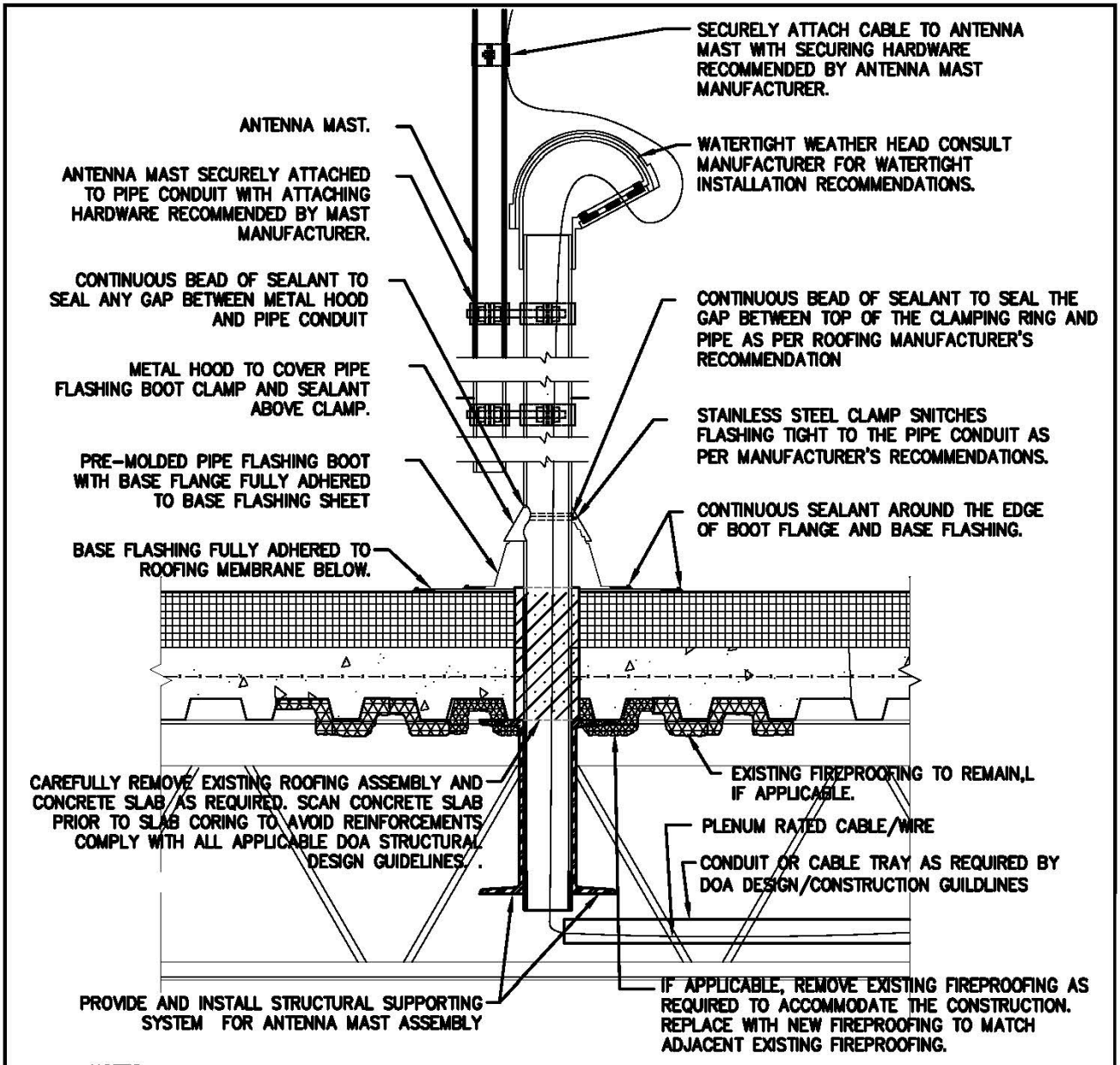


NOTES:

1. Proposed filling of new and existing cores and /or openings that fall under the following conditions shall be evaluated, engineered and stamped by a structural design professional registered in the State of Georgia: who shall provide stamped requirements in the construction documents whenever either:
   1.1 Penetration larger than 6 inches; or
   1.2 The clear spacing of adjacent penetrations is less than 3 inches.

PROJECT: ROOF PENETRATION REPAIR DETAIL			DETAIL NO.
DRAWING NAME: CONCRETE DECK ROOF REPAIR		Hartsfield-Jackson Atlanta International Airport	5
REVISIONS	DESCRIPTION OF REVISION	DRAWN BY: CM	REFERENCE DWG. NO.
No.		DESIGNED BY: CM	NONE
No.		CHECKED BY: CHECK	
No.		CONTRACT: NONE	
No.		WBS: NONE	
No.		SCALE: NTS	
		DATE: 03/26/2014	

Detail No.6 Pipe Thru Roofing System Over Conc. On Steel Deck

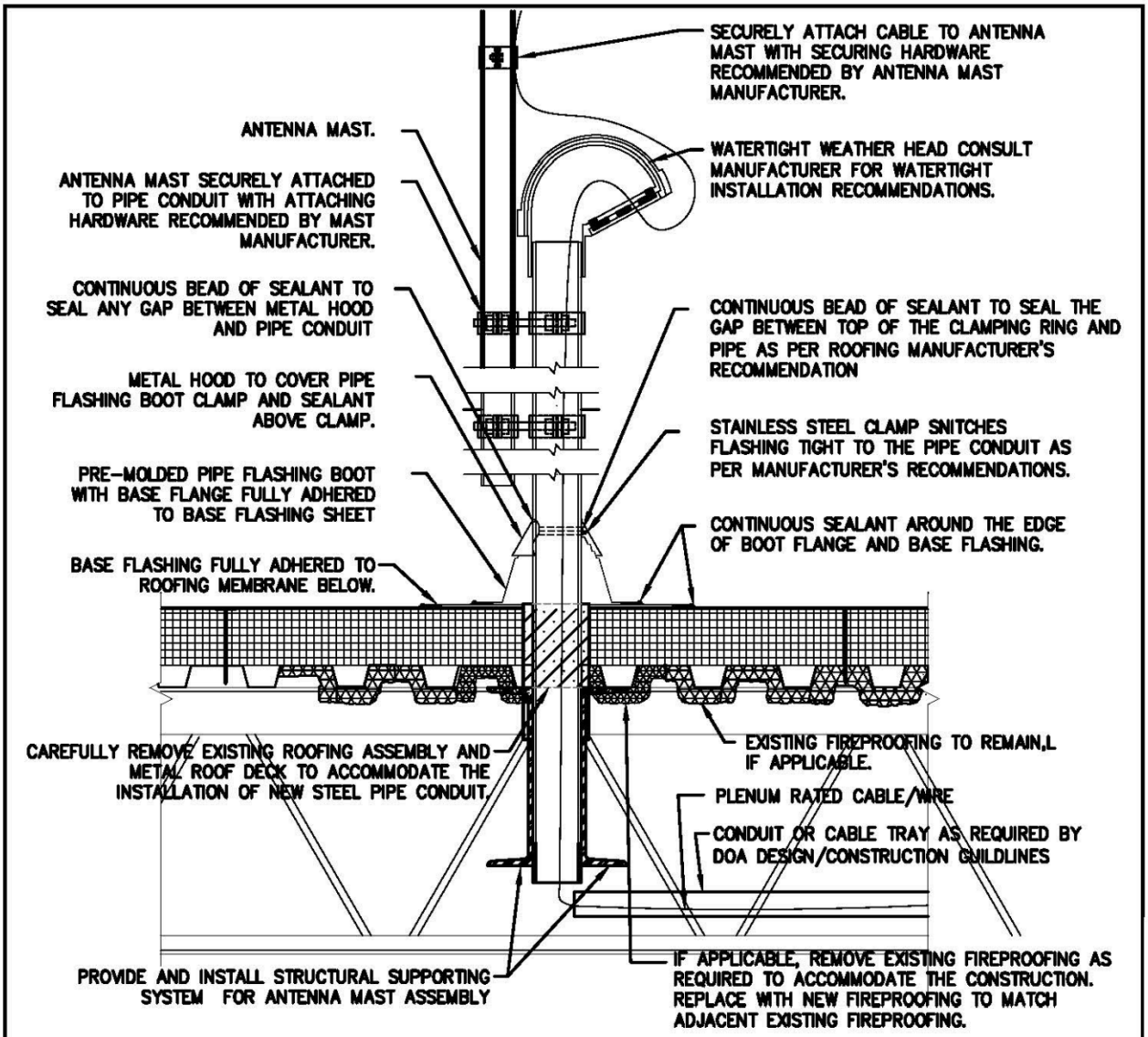


NOTES:

1. ANTENNA MAST, PIPE CONDUIT, PIPE CLAMPS AND STRUCTURAL SUPPORTING SYSTEM SHALL BE DESIGNED BY A GEORGIA STATE REGISTERED STRUCTURAL DESIGN PROFESSIONAL. SUBMIT DESIGN, DESIGN CALCULATIONS AND DETAILS, ON SIGNED AND SEALED DRAWINGS TO DOA PLANNING AND DEVELOPMENT FOR REVIEW.
2. THE SUPPORTING STRUCTURAL SHALL MINIMIZE THE VIBRATION IMPACT DAMAGE TO THE EXISTING ROOF ASSEMBLY.
3. PITCH POCKET IS UNACCEPTABLE AS WEATHER PROTECTION FOR ROOFING PENETRATION.
4. VERIFY EXISTING ROOF ASSEMBLY FIRE-RESISTANCE-RATING REQUIREMENT, PROVIDE AND INSTALL FIRESTOP SYSTEM AS NEEDED. SUBMIT PROPOSED FIRESTOP SYSTEM TO DOA PLANNING AND DEVELOPMENT FOR REVIEW.
5. ENSURE NEW CONSTRUCTION WILL NOT IMPACT EXISTING BUILDING WARRANTY OF ANY KIND.

PROJECT: EXISTING ROOF PENETRATION DETAIL FOR ANTENNA MAST			DETAIL NO.
DRAWING NAME: PIPE THRU ROOFING SYSTEM OVER CONC. ON STEEL DECK		Hartsfield-Jackson Atlanta International Airport	6
REVISIONS	DESCRIPTION OF REVISION	DRAWN BY: XX	REFERENCE DWG. NO.
No.		DESIGNED BY: XX	
No.		CHECKED BY: CHECK	
No.		CONTRACT: NONE	NONE
No.		WBS: NONE	
No.		SCALE: NTS	
		DATE: 03/26/2019	

Detail No. 7 Pipe Thru Roofing System Over Steel Deck

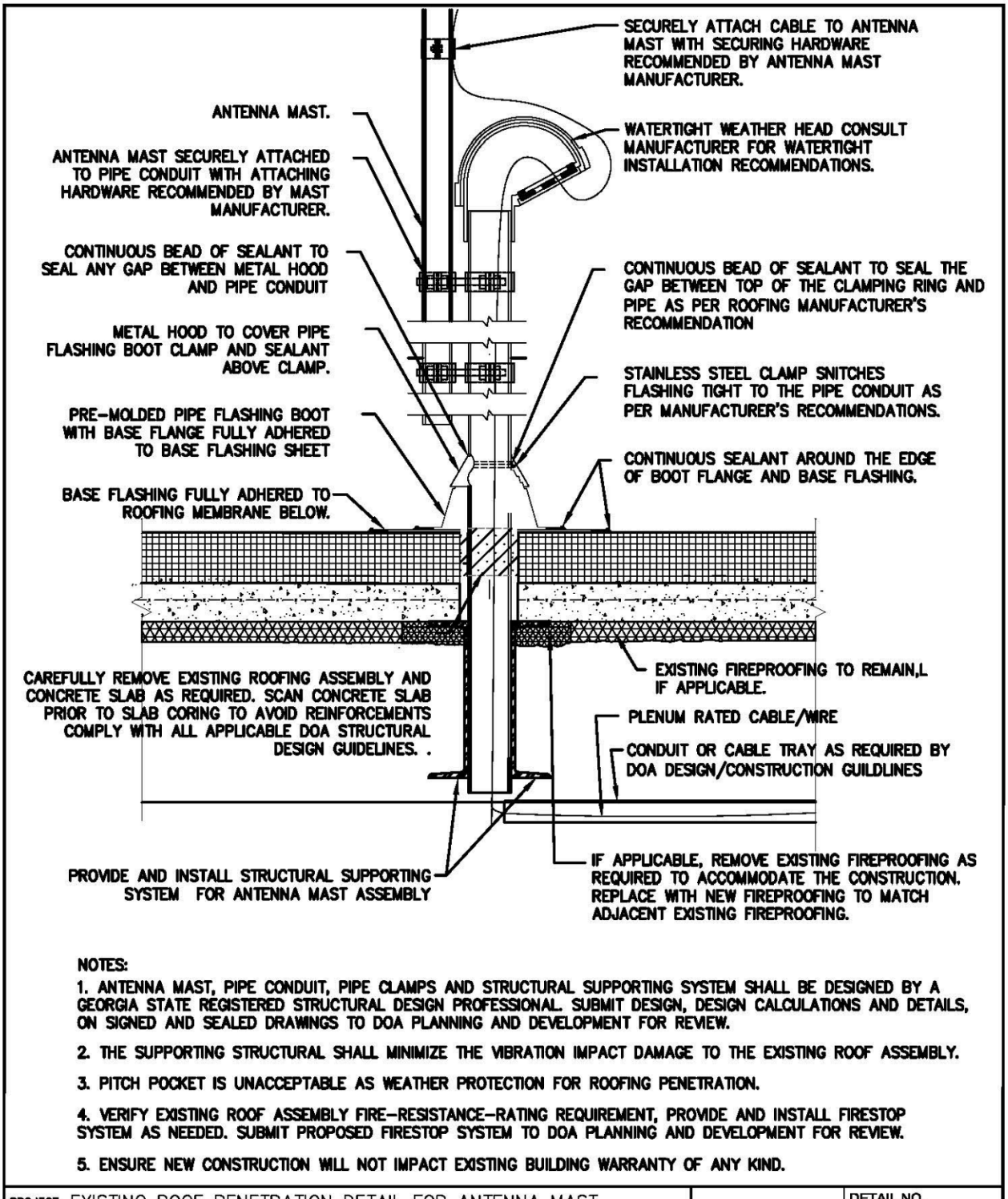


NOTES:

1. ANTENNA MAST, PIPE CONDUIT, PIPE CLAMPS AND STRUCTURAL SUPPORTING SYSTEM SHALL BE DESIGNED BY A GEORGIA STATE REGISTERED STRUCTURAL DESIGN PROFESSIONAL. SUBMIT DESIGN, DESIGN CALCULATIONS AND DETAILS, ON SIGNED AND SEALED DRAWINGS TO DOA PLANNING AND DEVELOPMENT FOR REVIEW.
2. THE SUPPORTING STRUCTURAL SHALL MINIMIZE THE VIBRATION IMPACT DAMAGE TO THE EXISTING ROOF ASSEMBLY.
3. PITCH POCKET IS UNACCEPTABLE AS WEATHER PROTECTION FOR ROOFING PENETRATION.
4. VERIFY EXISTING ROOF ASSEMBLY FIRE-RESISTANCE-RATING REQUIREMENT, PROVIDE AND INSTALL FIRESTOP SYSTEM AS NEEDED. SUBMIT PROPOSED FIRESTOP SYSTEM TO DOA PLANNING AND DEVELOPMENT FOR REVIEW.
5. ENSURE NEW CONSTRUCTION WILL NOT IMPACT EXISTING BUILDING WARRANTY OF ANY KIND.

PROJECT: EXISTING ROOF PENETRATION DETAIL FOR ANTENNA MAST			DETAIL NO.
DRAWING NAME: PIPE THRU ROOFING SYSTEM OVER STEEL DECK		Hartsfield-Jackson Atlanta International Airport	7
REVISIONS	DESCRIPTION OF REVISION	DRAWN BY: XX	REFERENCE DWG. NO.
No.		DESIGNED BY: XX	
No.		CHECKED BY: CHECK	
No.		CONTRACT: NONE	NONE
No.		WBS: NONE	
No.		SCALE: NTS	
		DATE: 05/13/2019	

Detail No. 8 Pipe Thru Roofing System Over Conc. Slab

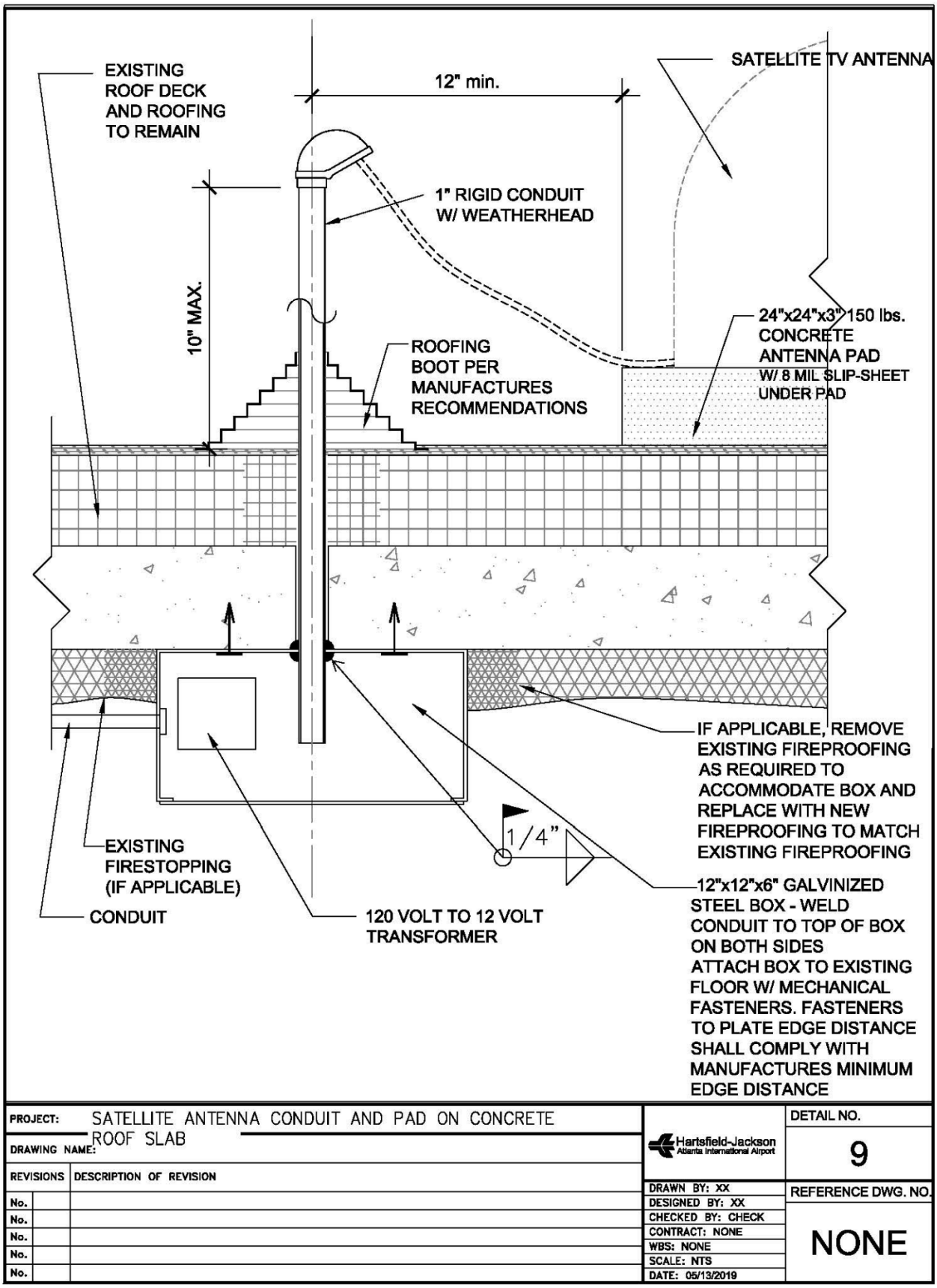


NOTES:

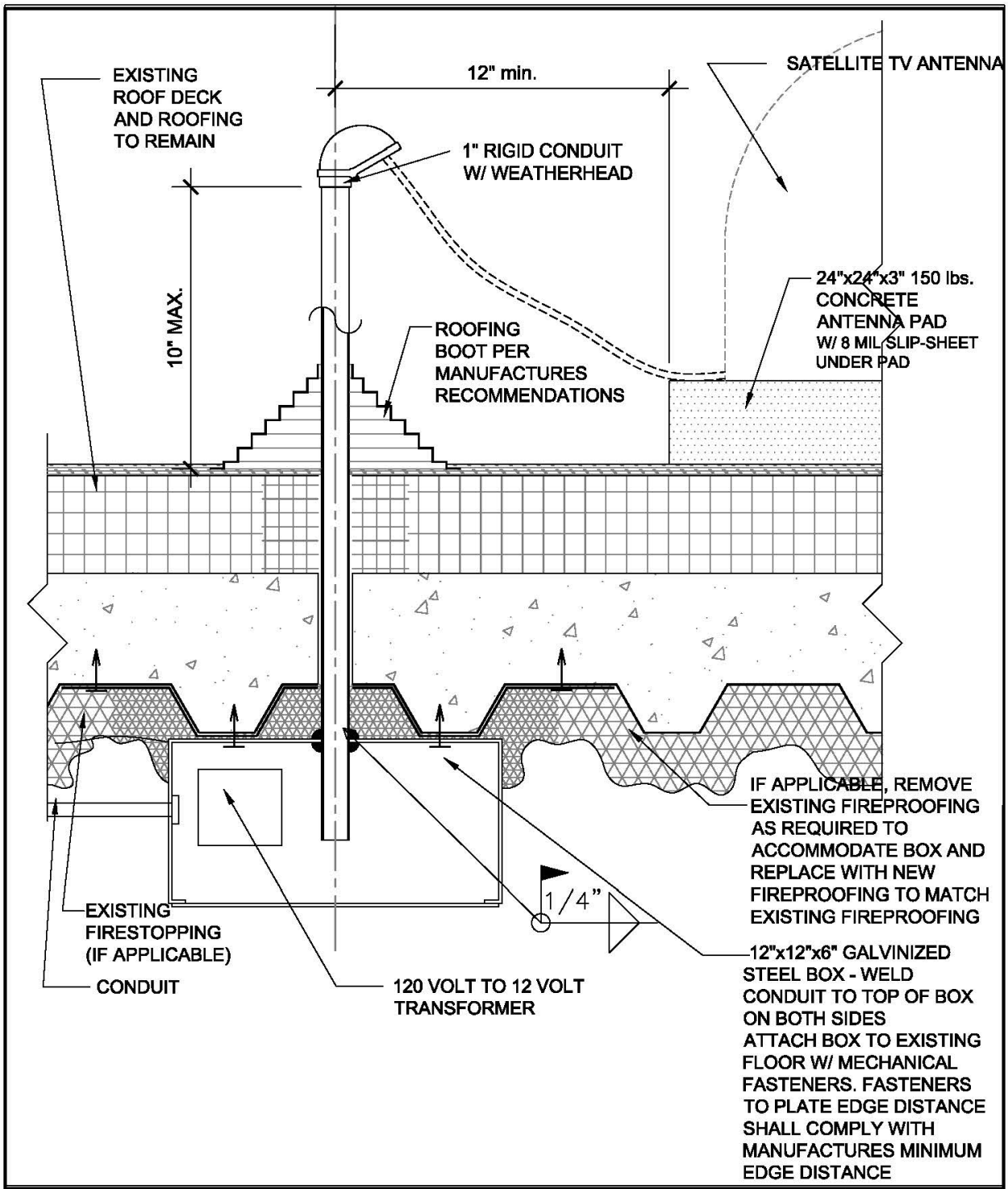
1. ANTENNA MAST, PIPE CONDUIT, PIPE CLAMPS AND STRUCTURAL SUPPORTING SYSTEM SHALL BE DESIGNED BY A GEORGIA STATE REGISTERED STRUCTURAL DESIGN PROFESSIONAL. SUBMIT DESIGN, DESIGN CALCULATIONS AND DETAILS, ON SIGNED AND SEALED DRAWINGS TO DOA PLANNING AND DEVELOPMENT FOR REVIEW.
2. THE SUPPORTING STRUCTURAL SHALL MINIMIZE THE VIBRATION IMPACT DAMAGE TO THE EXISTING ROOF ASSEMBLY.
3. PITCH POCKET IS UNACCEPTABLE AS WEATHER PROTECTION FOR ROOFING PENETRATION.
4. VERIFY EXISTING ROOF ASSEMBLY FIRE-RESISTANCE-RATING REQUIREMENT, PROVIDE AND INSTALL FIRESTOP SYSTEM AS NEEDED. SUBMIT PROPOSED FIRESTOP SYSTEM TO DOA PLANNING AND DEVELOPMENT FOR REVIEW.
5. ENSURE NEW CONSTRUCTION WILL NOT IMPACT EXISTING BUILDING WARRANTY OF ANY KIND.

PROJECT: EXISTING ROOF PENETRATION DETAIL FOR ANTENNA MAST			DETAIL NO.
DRAWING NAME: PIPE THRU ROOFING SYSTEM OVER CONC. SLAB		Hartsfield-Jackson Atlanta International Airport	8
REVISIONS	DESCRIPTION OF REVISION	DRAWN BY: XX	REFERENCE DWG. NO.
No.		DESIGNED BY: XX	
No.		CHECKED BY: CHECK	
No.		CONTRACT: NONE	NONE
No.		WBS: NONE	
No.		SCALE: NTS	
		DATE: 05/13/2019	

Detail No. 9 Satellite Antenna Conduit and Pad on Concrete Roof Slab

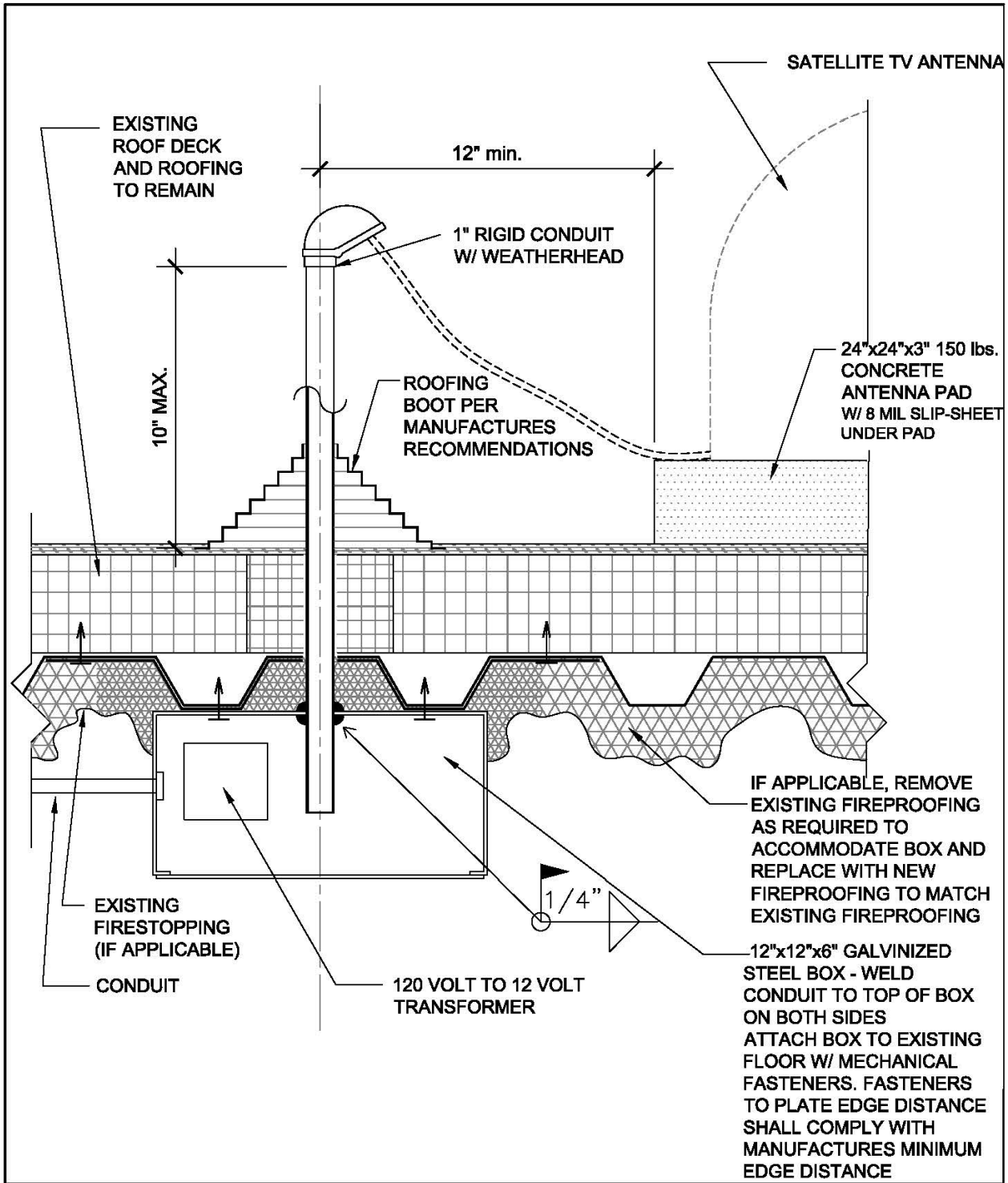


Detail No. 10 Satellite Antenna Conduit and Pad on Conc. on Metal Deck



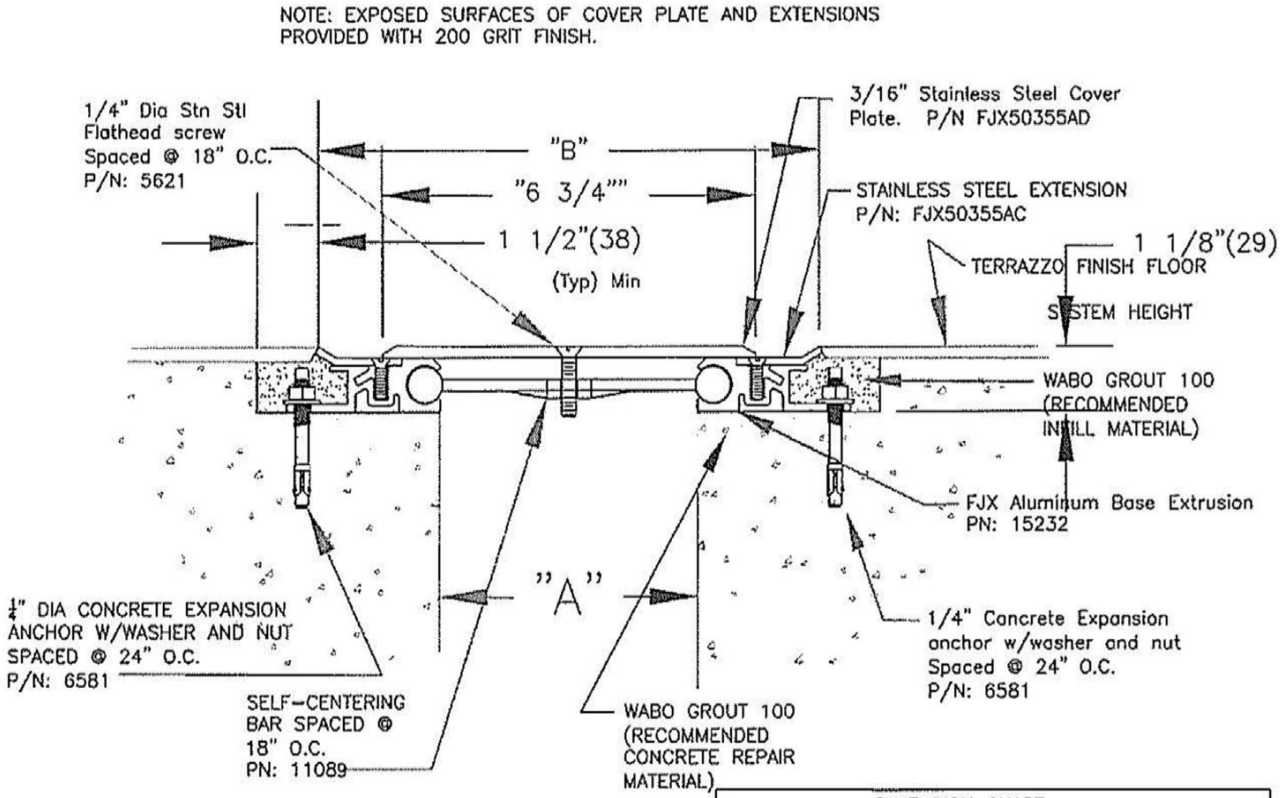
PROJECT: SATELLITE ANTENNA CONDUIT AND PAD ON CONCRETE			DETAIL NO.
DRAWING NAME: ON METAL DECK		Hartsfield-Jackson Atlanta International Airport	10
REVISIONS	DESCRIPTION OF REVISION	DRAWN BY: XX	REFERENCE DWG. NO.
No.		DESIGNED BY: XX	
No.		CHECKED BY: CHECK	
No.		CONTRACT: NONE	NONE
No.		WBS: NONE	
No.		SCALE: NTS	
		DATE: 05/13/2019	

Detail No. 11 Satellite Antenna Conduit and Pad on Metal Deck



PROJECT: SATELLITE MAST AND PAD DETAILS			DETAIL NO.
DRAWING NAME: SATELLITE ANTENNA CONDUIT AND PAD ON METAL DECK		Hartsfield-Jackson Atlanta International Airport	11
REVISIONS	DESCRIPTION OF REVISION	DRAWN BY: XX	REFERENCE DWG. NO.
No.		DESIGNED BY: XX	
No.		CHECKED BY: CHECK	
No.		CONTRACT: NONE	NONE
No.		WBS: NONE	
No.		SCALE: NTS	
		DATE: 05/13/2019	

Detail No. 12 Expansion Joint Detail



DIMENSION CHART				
"A" MIN.	"A" MID.	"A" MAX	"B" MID.	TOTAL MOVEMENT
1"	2"	3"	8 5/8"	2"

NOTE:
MID RANGE DIMENSIONS ARE AT MEAN TEMPERATURE
MIN. & MAX. ARE AFTER MOVEMENT

FLOOR TO FLOOR DETAIL 3 A3.2
N.T.S EXPANSION JOINT MODEL FJS-200 MODIFIED
WATSON BOWMAN ACME CORP
716 691-75666

Hartsfield-Jackson Atlanta International Airport

City of Atlanta

Department of Aviation

Office of Infrastructure Planning & Development

Tenant
New Construction and Modifications

Design Standards

Sustainable Development

The Sustainable Development Standards incorporate sustainability components and City of Atlanta ordinance requirements into all Department of Aviation projects. The Sustainable Development Standards should be recognized as best practices and will contribute to the Airport's overall sustainability goals of reducing energy and water consumption, waste generation, and greenhouse gas emissions.

P&D requests that the Sustainable Development Standards be implemented in all Tenant projects at ATL to the greatest extent possible. This implementation is voluntary and in no way a contractual requirement. However, incorporating these components will support reducing utility usage and gas emissions, helping to lower overhead costs and improve the indoor and outdoor environmental quality for passengers, concessionaires, and employees.

The standards can be accessed by clicking here.

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

Mechanical Engineering

Design Standards
Mechanical

Table of Contents

Appendices

Design Standards

Mechanical Engineering

1.0 Purpose

A. The purpose of this document is to outline the minimum design standards and installation requirements for mechanical systems (HVAC, plumbing and fire protection), which are installed to serve various spaces through the Central Passenger Terminal Complex (CPTC) at Hartsfield-Jackson Atlanta International Airport (H-JAIA or "Airport").

2.0 Codes and Standards

A. All construction documents shall be by professional engineers registered in the discipline specific to the trade work indicated on the contract drawings.

B. All governing codes and standards indicated in the trade sections of this document will be adhered to by the designers of record for all new construction and renovation projects initiated on any facility inside the bounds of H-JAIA or under the jurisdiction of DOA.

C. A&E firms shall design to the most current codes adopted by the City of Atlanta and State of Georgia. Code conflicts shall be resolved by using the more stringent applicable code. Notify DOA-P&D of any substantive discrepancies between various codes or with any of these standards.

D. Applicable Codes (Building Codes and regulations as adopted by the State of Georgia with amendments)

1. International Plumbing Code (With Amendments)
2. International Building Code (With Amendments)
3. International Fuel Gas Code (With Amendments)
4. International Mechanical Code (With Amendments)
5. International Energy Conservation Code
6. National Fire Protection Association (NFPA) Codes
7. NFPA 70 National Electrical Code
8. NFPA 90A Standard for the Installation of Air Conditioning and Ventilation Systems
9. NFPA 90B Standard for the Installation of Warm Air Heating and Air Conditioning Systems
10. NFPA 96 Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations
11. NFPA 101 Life Safety Code
12. NFPA 13 Standard for the installation of Sprinkler Systems
13. NFPA 14 Standpipe and hose systems
14. NFPA 20 Installation of stationary pumps
15. Standard Building Code

E. Standards

1. AATC Building Automation Systems Standard -- Version 2.0
2. ANSI American National Standards Institute

3. ASHRAE 62.1 Ventilation for Acceptable Indoor Air Quality
4. ASHRAE 90.1 Energy Standard for Buildings
5. ASME American Society of Mechanical Engineers
6. National Green Building Standards
7. Bureau of Watershed, Grease Interceptor design

3.0 General Drawing Requirements

A. Drawing layouts shall be neat, orderly and complete, showing all information required to convey the scope of work to general contractors or reviewing entities. Drawings will be prepared under the supervision of a Georgia state licensed professional engineer and shall bear his/her seal.

B. Mechanical plans, (HVAC, Plumbing, and Fire Protection) shall be consistent with the Architectural plans (e.g., same scale, match lines, common graphic standards) as the base set of documents. Part plans for mechanical equipment rooms, restrooms, kitchens and all rooms shall be provided where the density of support equipment prohibits clear documentation of the systems serving the space at the architectural base scale.

C. Provide all necessary drawing conventions to aid in the easy identification and location of spaces within the CPTC, Items shall include, but not be limited to project north indicators, column lines and call outs, room identification (rm number and/or function/name as space allows)

4.0 Trade Specific Drawing Requirements:

A. HVAC

1. Show all primary and secondary ductwork and major HHW/CHW piping using double line graphic standards. HVAC plan drawings shall be 1/8” or larger.
2. Provide sections as required to show inter-trade coordination in space restricted areas (i.e. ceiling plenums, mechanical chases, baggage handling areas, etc.)
3. Provide mechanical enlarged part plans as required to show equipment, ductwork, and piping in mechanical rooms. Enlarged plans shall be ¼" scale.
4. Provide riser diagrams for CHW, HHW, outside air, and exhaust air as required.
5. Provide HVAC installation details, as required, for major equipment and devices that have complex installation requirements.
6. Provide schedules for all HVAC equipment
7. Provide air flow balance summations for space (or building) as required to indicate/validate positive pressure relationship between critical building components.
8. Provide Control schematic diagrams for all equipment tied to DDC system or under stand-alone control. Provide I/O summary and written sequence of operation on drawings.
9. Provide HVAC calculations (Bldg. load, OA requirement, pump, fan, air flow balance, etc.) for review.
10. Provide specifications using standard division nomenclature with all sections required to describe all equipment and all construction methods utilized.
11. See Table 1 for Operating Parameters.

B. PLUMBING

1. Large scale plumbing plans shall be 1/16” scale plans. Coordinate with DOA if the project requires the use of a different scale. Use 1/8” scale plans (as a minimum) for all restrooms and food service areas.
2. Piping systems shall be shown on the plan background that corresponds to the level on which the piping is to be installed. (i.e- sanitary piping that serves a boarding level FD will show up on the apron level plan in the ceiling plenum)
    a. Backgrounds should clearly indicate where designated electrical rooms, communications rooms control rooms and IT (MDF/IDF) rooms are located. Piping should not route thru theses rooms. If piping must run thru theses spaces, show major equipment in the room(s) and indicate provisions to protect and critical equipment below.
    b. EOR must coordinate pipe routing with other major systems that support ramp services. Show systems like baggage handling conveyors and carousels, tug lanes, electrical gear and any item that needs O&M clearance to operate on plans and indicate provisions for maintenance.
3. Provide riser diagrams for all sanitary waste and vent, grease waste, domestic water systems, and natural gas systems.
4. Provide schedules for all major plumbing devices including but not limited to, water heaters, pumps, air compressors, etc. Example:
    a. Plumbing Fixture Schedule with Mark, description, pipe connection sizes, manufacturer, model number and description as a minimum.
    b. Water Heater Schedule with location, make and model number, gallons, number of elements Voltage and delivery temperature.
    c. Pump Schedule with Mark, manufacturer, model number electrical, RPMGPM, Head Description as a minimum.
    d. Drain Schedule with mark, manufacturer, model number, and description as a minimum.
    e. Equipment schedule, Mark description, manufacturer, model number, description, etc.
5. Indicate clearly locations and line sizes of all connections to existing systems. (coordinate with civil drawings and DOA master utility locations)
6. Provide detail sheets with detail that are edited for the specific project.
7. Indicate rainfall rate used for design and indicate roof square footage for each roof drain and pipe.
8. Calculations (Fire Protection)
    a. Provide Hydraulic calculations on all major designs and renovations.
9. Specifications using standard division nomenclature with all sections required to describe all equipment and all construction methods utilized.
10. Demolition Drawings
    a. Provide demo drawings as shown on architectural drawings. (Size, scale, area)
    b. Show existing utilities that are being demoed.
    c. Provide scope for provision to connect in future or remove abandoned piping.

C. FIRE PROTECTION

1. Provide design criteria drawings, 1/8” scale or larger with existing and new sprinkler head locations, lights and diffusers (for coordination), Hazard classification, including density and remote square footage and location of same for all spaces within a design.
2. Provide piping layout plans for major renovation projects and new construction.
3. Provide specifications including but not limited to, piping, sprinkler heads, equipment, ETC. Provide specifications using standard (xxx) division nomenclature with all sections required to describe all equipment and all construction methods utilized.
4. Provide hydraulic calculations with shop drawings done by a certified fire protection system designer. Sprinkler shop drawings and as-built drawings are to be submitted to DOA in an approved format.
5. Provide fully coordinated RCP’s showing sprinkler head locations and types. RCPs shall show ceiling types, light and diffuser locations for coordination.
6. Calculations

5.0 Primary Utilities Overview

A. Central Plant Configuration

1. The majority of the CPTC is served by two Central Utility Plants (CUP’s). The T-CUP plant is located at the east end of the Main Passenger Terminal on the Apron level between the center spine roads. The E-CUP plant is located at the west end of E concourse on the Pedestrian Mall (Plane-Train) level next to the Bombardier train maintenance shop.
2. Chilled Water (CHW) and Heating Hot Water (HHW) are distributed thru a traditional four pipe system. Because of environmental requirements we are not allowed to operate boilers during summer months (approx. May- September). As an energy savings measure, we shut down the chilled water system based on OA temp. (typically when OA temp falls below 60 degrees. Neither CUP has water side economization. EOR’s should consider the CUP’s as functioning as 2-pipe systems with the exception of limited periods during shoulder seasons when OA temperatures dictate the energization both chillers and boilers.

B. CHW Distribution

1. The CHW system is a Primary/Zoned Pumping system. With a cross connection that allows concourses loads (specifically C& D CON’s) to be feed from either CUP. T-CUP serves the North & South Terminal, the Atrium and CON’s T-D. The piping system in the main utility tunnel was originally designed to serve A-D Concourses from T-CUP and Concourses E & F from E-CUP. The cross connection is valved and sized to allow both C&D CON’s (as a pair) to be fed from either CUP.
2. Primary Pumps circulate CHW thru the chillers within the CUP. Primary Pumps are paired with the chillers and sized to pump the chiller and charge the main loop. Each plant typically has at least N+1 redundancy for major equipment.
3. Zone Pumps are located within each concourses’ individual pump room and are sized to circulate CHW thru the tunnel the full distance back to the CUP, for CON’s T-D. Main Terminal pumps are in T-CUP. Concourse E&F zone pumps are in E-CUP. There are typically 2 zone pumps per concourse sized at 50% of full load. (note: DOA usually requires the selection each zone pump to handle 60-

70% of full load by riding the curve) Consult with P&D whenever a Concourse addition adds a significant amount of load to the CHW system, as pump replacement will need to be evaluated by the EOR

C. HHW Distribution

1. The HHW system is a Primary/Secondary/Tertiary Pumping system. T-CUP serves the North & South Terminal and CON's T-D while HHW for Concourses E & F are served from E-CUP
2. Primary Pumps circulate HHW thru the boilers within the CUPs. Primary Pumps are paired with the boilers and sized to pump the boiler and charge the main loop. Each plant typically has at least N+1 redundancy for major equipment
3. Secondary Pumps are typically located in the CUPs and are sized to circulate HHW thru the facility loop
4. Tertiary Pumps are located within each concourses' individual pump room and are sized to circulate HHW thru the concourse, for CON's T-D. The pumps that serve the various Main Terminal tertiary loops are located in the T-CUP. Concourse E&F Tertiary pumps are in E-CUP. There are either 2 or 3 Tertiary pumps per concourse. For Concourses with 2 pumps each pump is sized at 100% of full load. For Concourses with 3 pumps, each pump is sized for 50% of full load flow. Consult with P&D whenever a Concourse addition adds a significant amount of load to the HHW system, as pump replacement will need to be evaluated

D. Domestic Water Configuration

1. Water is supplied from Hapeville and College Park. The airport is looped with water mains.
2. Each concourse is fed with one domestic water and a combination domestic and fire service.
3. The water pressure is at or above 80PSI and requires a PRV.

E. Sanitary Sewer Configuration

1. Sanitary sewers run North and South toward the center point
2. Each concourse has 4" and 6" laterals connecting the concourse waste to the mains.
3. Grease Waste from large food and Beverage areas require Grease Waste, (GW), to discharge into one or two 1,500-gallon underground grease interceptors or a 1,500 or a 3,000 gallon above-ground grease interceptor.

F. Natural Gas Distribution

1. Natural Gas is supplied by Atlanta Gas Light.
2. Gas piping is routed underground between the taxi way and the NLVR with a branch off to the south side of each concourse.
3. Piping is regulated to 5PSI or higher on the roof
4. Gas piping for Concourse E and F is routed inside each building and on the roof
5. Gas piping for T-CUP is fed from the 6" gas main on the roof of Concourse-T.
6. The Food & Beverage Concessions service to each space is metered

G. Fire Protection Configuration

1. Each concourse is equipped with a 750 GPM fire pump and jockey pump.

2. Each fire pump room is equipped with a double check valve assembly, alarm check valves, (Dry or wet), controllers, test headers, Fire and Jockey pumps, fire department connections, distribution piping and a fire hydrant in the area.
3. There are Fire Valve Rooms on the Apron Level with FDC and alarm valves, (Wet or Dry).
4. The existing sprinkler system is designed at a minimum design density of Ordinary Hazard Group I. (Any new systems are to be designed at a minimum of Ordinary Hazard Group I)
5. Critical Rooms and MDF rooms are to be protected with clean agent fire suppression systems.
6. Areas that are subject to freezing are protected with a dry sprinkler system or NFPA approved Heat Trace and insulation.
7. Parking Structures are protected with a manual dry standpipe system, and with wet sprinklers in any office areas.

6.0 Space Specific System Descriptions (HVAC)

A. Large CPTC Public Spaces HVAC

1. Spaces which fall under this heading are free of interior partitions, relatively large volumes which can either be interior zones or combination interior/exterior zones with the provision that both thermal and air diffusion through the space is relatively uniform and unencumbered. Spaces which generally fall under this category include (but are not limited to) Terminal ticketing and baggage claim areas, Large Terminal Atria, Public seating & Circulation areas, TSA and Concession Cue areas
2. Large CPTC Public spaces are to be served by medium and low pressure VAV Roof Mounted units RMU's (or RTU's) wherever possible. VAV indoor AHUs can be used as an alternate, when practical, provided a clean source for OA can be routed to the interior mechanical room. Sufficient space for 100% economizer and relief air must also be provided. Separated ductwork and motorized damper for minimum and economizer outside air shall be provided. Outside air and return air in mechanical rooms shall be ducted to AHUs.
3. Provide Single Zone VAV RMU's or AHUs for these large-open volume public spaces which have relatively uniform heating and cooling load distributions. These AHUs/RMU's will utilize chilled and hot water from the central plant water loops.
4. Distribution ductwork in these spaces need to ensure very good air circulation to minimize the chance of hot or cold spots.

B. Zoned CPTC Public Spaces HVAC

1. Spaces which fall under this heading are located adjacent to each other but have varying load profiles due to external heat gains, or differences in internal space utilization. Spaces which generally fall under this category include (but are not limited to) Concourse main circulation corridors, Hold Rooms, smaller Concourse Atria, Food Courts, and Concession, Tenant Cue areas, General Office and Back of House spaces.
2. Zoned CPTC Public spaces are to be served by medium and low pressure VAV Rooftop RTUs (RMU's) wherever possible. VAV indoor AHUs can be used as an alternate, when practical, provided a clean source for OA can be routed to the interior mechanical room. Sufficient space for economizer and relief air must also

be provided.

3. Provide VAV AHUs/RMU's for these spaces. These AHUs/RMU's will utilize chilled and hot water from the central water loops. Provide VAV terminal units with hydronic heating.
4. Use of Fan powered terminal units/powered induction units (PIUs) is discouraged in the CPTC base systems. Coordinate with DOA/AATC to receive prior approval before using PIUs in any special applications.

C. Computer Rooms

1. AIS has several server rooms located throughout the facility. Main server rooms utilize dedicated "Leibert Type" CRU's. The main train control server rooms are conditioned with similar CRU's.
2. In the future, on a case-by-case basis, we will have different types of equipment based on the critical nature of the equipment being cooled.
3. Typical systems run from DX cooling split systems or package thru-wall systems up to chilled water or air-cooled computer room units. Special care must be used for rooms conditioned from the base building system as the central plant is de-energized when the OA temp. is below 60 degrees F.

D. Transformer, Substation & Switchgear Room

At a minimum**,** provide ventilation as the load dictates, eight (8) to ten (10) air changes per hour is considered minimum ventilation for typical CPTC applications. Base building air conditioning can be used in lieu of ventilation where existing RTU's/ AHU's have sufficient AC spare capacity to all rooms, GA Power separate. No plumbing shall be run through these rooms whenever possible. If plumbing routing through the room is unavoidable, provisions shall be made to protect equipment from water. If plumbing routing through the room is unavoidable, provisions shall be made to protect equipment from water.

E. Apron Level Support Areas

1. Areas with heavy tug traffic that is exposed to outside air, (under the terminal) need to provide exhaust and fresh air (cross-ventilation) fan systems. Heated ventilating units may be required if large amounts of un-tempered outside air are needed to ventilate a given Apron level space.
2. In locations where baggage handling operators are located for extended periods of time, (i.e. make up stations) provide supplemental heating systems (typically, radiant heat) for operator comfort.

F. Communication Closets

1. Type of AC is dependent on location and critical nature of application. If base building AC is available, it is acceptable to use a dedicated VAV terminal unit.
2. If the application is critical, a backup fan may be required to provide ventilation in case of a system failure.
3. Where Base Building AC is not available, (typical on Apron level), provide DX unit or split system AC systems.
4. In critical spaces, two DX units or back up fan ventilation systems may be required.
5. Water source heat pump tied into domestic water system is not allowed under any circumstances.
6. AGT Level Communication Rooms: Due to the location of these communication rooms, heat rejection is problematic. Use DX split systems to condition space

Reject heat into the closest AGT Mechanical Room, only if a path to the apron level cannot be created.

G. Restrooms

1. Public Restrooms will be directly exhausted to the exterior of the building. Provide heating and cooling VAV terminal units to condition the space. Provide transfer air duct systems to allow make-up air into any restroom if required.
2. Back of House Restrooms will be directly exhausted to the exterior of the building. Provide heating and cooling VAV terminal units to condition the space as required. Provide transfer air duct systems, or door grilles, to allow make-up air into any restroom.

H. Hold Bag Screening Facilities

1. Screening Rooms: These spaces are where the large CTX automated baggage screening systems are located along with the associated baggage handling conveyer systems. These spaces are considered critical application spaces, with high heat output equipment.
2. These spaces are to be served by medium and low-pressure single zone AHUs. Provide a clean source for OA to the mechanical room. Sufficient space for economizer and relief air must also be provided.
3. Provide Single Zone VAV AHUs for these large-open volume spaces which have relatively uniform cooling load distributions. These AHUs will utilize chilled and hot water from the central water loops. Provide hot water pre-heat coils for freeze protection as required.

I. Spaces requiring Major Equipment Replacement

1. When a space requires a straight one for one replacement of a major piece of equipment, the EOR shall, at a minimum, be sure to coordinate the following:
   a. Current manufacturers can provide the same features as the original manufacturer.
   b. Equipment dimensions can be made to work in the existing space allocated for the original equipment.
   c. Existing structure can accommodate the new equipment weight.

7.0 Space Specific System Descriptions (Plumbing)

Water Service rooms for new development shall be sized to accommodate all required assets.

A. Infrastructure consists of domestic water supplied from the city water system at a pressure of 60 to 70 pounds. There is a sanitary sewer system at each concourse and terminals. There is natural gas supplied on the roof of concourse T, A, C, D, and inside E and F. Gas is routed to concourse B but not installed on the roof. The natural gas is for limited use mainly for cooking by concession with a separate meter. T CUP gas is supplied from piping routed from the south end of concourse t on the roof to the center point. E CUP gas is supplied from piping in the tunnel between concourse E and F.

B. Restrooms

1. Public restrooms shall be ADA accessible with touch free metering low flow fixtures (Per IPC).
2. All public restrooms shall have floor drains in each fixture area.

3. All accessible toilet chases will have floor drains.
4. All public restroom areas will be equipped with a janitor closet with an electric water heater with mixing valve, floor drain and a mop sink as a minimum.

C. Back of House Restrooms

1. Restrooms shall be ADA accessible with low flow fixtures (per IPC)
2. Restrooms shall have floor drains.

D. Back of House Break Rooms

1. Break rooms with sinks can use storage heaters or instant electric water heaters
2. If cooking is required or a dishwasher is required, a grease trap or interceptor may be required.

E. Apron Level Support Areas

1. If cooking is required or a dishwasher is required a grease trap or interceptor may be required.

F. Parking decks

1. Storm Drainage, Top Level and exterior ramps shall be designed per IPC Rainfall Criteria for City of Atlanta.
2. Lower levels are to be designed for minimum run-off from cars and blowing rain.
3. Elevator Penthouse and stair towers roofs are to be designed with primary, and overflow drains or scuppers.
4. Parking deck entrance will be designed to capture runoff from cars only unless exterior grade requires more rainfall rate.
5. Drainage and pipe calculations shall be noted on each deck drain and trench drain on top level, (Square footage, area and GPM), will be noted on each deck drain and trench drain on top level, all vertical and horizontal piping along with pipe size.
6. Domestic Water, (If required), entrance will be in heated space in a secure box or with heat trace and insulation, shut-off valve and drain. Hose bibbs will be equipped with a vacuum breaker. Maximum flow of 10GPM unless approved by DOA.

8.0 Space Specific Systems Descriptions (Fire Protection)

A. Infrastructure, Fire protection is supplied by a fire pump or pumps and jockey pump or pumps on each concourse and terminals. Dry pipe systems or heat trace and insulation are provided where fire protection is subject to freezing.

B. Design Criteria, all areas in the CPTC are to be designed to Ordinary Hazard Group I as a minimum.

C. Accessible toilet chases will have sprinklers.

D. Large CPTC Public spaces and zoned CPTC public spaces, including restrooms shall have All sprinkler heads be concealed type with color to match ceiling cover.

E. Back of House Areas Back of house areas will be protected with concealed heads or semi-recessed where lay-in ceiling is installed. Areas without ceiling will be protected with upright heads.

F. Freeze Protection Exposed Apron level spaces

1. Areas subject to freezing will be dry pipe system or be heat traced and insulated.

G. MDF/T-3 Das – Clean Agent Fire Protection System

1. MDF/T-3 DAS and other critical computer rooms will be protected with a Clean Agent Fire Suppression System.

9.0 HVAC Materials and Equipment

A. Roof-Mounted Air Handling Units (RMU)

1. Roof-Mounted air handling units shall be custom built and sized to meet the cooling, heating and ventilation needs of the spaces it will serve. The requirements are application specific and will be coordinated with P&D-E during the validation and /or early (30%) design phase. Typical features include:
2. RMU's shall be all aluminum construction including unit base rails.
3. RMU's shall include (as required by application) chilled water-cooling coil section, hot water pre- heat coil section, supply fan, mixing section with dampers, Return section, discharge section and access sections between coils and between filters. RMU's shall have interior access corridor (min 54" clear width). Outside air dampers shall be split into a section for minimum requirements and a section for economizer outside air. Minimum outside air sections shall be configured to allow MFG required installation and proper operation of the flow meter at all velocities.
4. Camfil Merv 14 high flow bag filters, 30% efficient pre-filters.
5. Provide UV light assemblies as a means of coil sterilization
6. Provide relief fan section for odor and (nonlife safety) smoke purge to be used after a fie event occurs on a given concourse.
7. Where required by extensive return air duct runs, units shall be provided with return fans and relief dampers.
8. Where possible RMU's will utilize fan array assemblies to increase reliability.
9. Provide variable frequency drives on all VAV RMU's, mounted inside the unit. Provide redundant variable frequency drives on all critical RMU's,
10. Interior lights and service receptacles shall be wired to a junction box for single-point 120-volt feed that can be powered when the main unit components is de-energized.

B. Interior Modular Air Handling Units (AHU)

1. Interior air handling units shall be modular, double-wall units and shall include (as required by application):
   - chilled water-cooling coil, hot water pre-heat coil,
   - Camfil Merv 14 high flow bag filters, 30% efficient pre-filters.
   - Provide UV light assemblies as a means of coil sterilization
   - Utilize Fan array or centrifugal supply fan, depending on unit size.
   - Mixing box section with dampers and interior lights.
   - Where required by extensive return air duct runs, units shall be provided with. return fans and relief dampers.
   - Variable air volume units shall be provided with variable frequency drive.
   - Interior lights and service receptacles shall be wired to a junction box for single-point 120-volt feed.
   - AHU shall be able to operate in 100% outside air economizer mode.

2. Outside air intake location shall be analyzed for requirement of including carbon filtration. Dedicated OA injection fan may be required to ensure minimum required OA is achieved if OA route pressure drop is larger than 0.75” W. C.’1.

C. Variable Air Volume Boxes (VAV)

1. VAV Boxes shall be single-duct terminal unit complete with modulating damper, airflow measuring sensor, and internally insulated casing. Reheat boxes shall be provided with hot water reheat coils. DDC controls and damper actuator will be provided by Controls contractor.

2. Power wiring for damper actuators shall be provided for in design.

10.0 Ductwork

A. Ductwork shall be galvanized steel sheet metal designed and constructed per SMACNA duct construction standards. Fiberboard duct is not permitted. Main duct trunks shall be located over common areas or corridors whenever possible. Balancing dampers shall be provided at proper locations to allow balancing of systems. Provide turning vanes to help system balance and minimize effect.

a. Flex duct run outs to diffusers shall not be longer than 6 feet. Flex duct shall not be used in exhaust systems.

b. Coordinate RCP to ensure access to all devices located above hard ceilings.

B. Duct Insulation

1. Duct insulation for supply air, return air, and outside air ducts above ceilings shall be fiberglass blanket wrap, 2” thick, 1.5 lb./cu.ft. density with a factory-applied FSK vapor barrier. Insulation thermal conductivity at 75^0F shall be 0.27 BTU-in./hr./sq.ft./^{0}F. On rectangular ducts 24 inches wide and larger, apply stick pins and washers on 18-inch centers on bottom side of duct.

2. Duct insulation for supply air, return air, and outside air ducts in exposed unconditioned spaces shall be rigid fiberglass board insulation, 2.5” thick, 3 lb./cu.ft. density with factory-applied FSK vapor barrier.

3. All insulation R-values shall meet the current energy code requirements.

C. Air Distribution Devices

1. Air distribution devices selected shall match the style of devices in existing areas and in new facilities. Devices shall be provided with dampers and shall be selected based on throw and noise criteria. Linear slot diffusers shall be used at large glass areas on exterior walls.

D. Controls

1. Controls for all new equipment installations and renovation of old systems shall be DDC and shall be fully BACnet IP compatible. Systems shall connect and be fully integrated with the existing Niagara system frontend. Maintained and operated by AATC. Graphics shall be seamlessly integrated into the Niagara front end for end user ease of use.

2. Multizone AHU programming shall comply with Multizone Standard Sequence (see appendix A). Single zone AHU programming shall comply with Single Zone Standard Sequence (see appendix B). Terminal Units shall comply with Terminal Unit Standard Sequence (see appendix C).

3. The BACnet points required for the BMS shall be configured, exposed, and viewable from the base building BMS front end and comply with the BMS Points. Standard List for naming conventions and descriptions (see appendix D).

4. Zone temperature thermostats shall be networked type sensors, communicating on either the SA or BACnet bus.

E. Test and Balance

1. All HVAC systems shall be tested and balanced upon completion of installation. The TAB services shall be performed by an AABC-certified contractor.

F. Utility Piping

1. Chilled Water and Heating Hot Water pipe shall be ASTM A-53 Grade B pipe carbon steel. Piping 2-1/2” and smaller shall be threaded and coupled with 150 lb. threaded fittings. Piping 3" and larger shall be plain end pipe with 150 lb. butt-welded fittings. *Welded or threaded fittings shall be used on all CHW & HHW piping in the following locations:*
    - *CUP’s*
    - *Utility tunnels*
    - *Ceiling plenums or chases that will be difficult to access*. Coordinate with DOA to evaluate accessibility thresholds.

2. Other piping materials and joining methods are allowed outside of these three specific areas as indicated below:
    a. Type L hard-drawn copper with solder joint fittings may be used for piping 2 - 1/2” and smaller. (This is typically for HHW distribution piping to TU’s and possibly on CHW & HHW in mechanical rooms)
    b. Mechanical joining systems pressed joint & grooved-joint systems may be used in mechanical spaces, (AHU rooms, RMU Piping vestibules, etc) exterior or exposed spaces and on distribution piping where reasonable access is assured.
    c. Mechanical joint systems may be used for piping 2 ½” thru 8”. Couplings 2 ½” through 8” to be of installation-ready design (requiring no disassembly to install)
    d. Gaskets for mechanical joint systems on hydronic services shall be EPDM. The gasket material shall be suitable for the fluid service type and temperature.
    e. Quality assurance- The EOR shall coordinate their specification with the mechanical joint manufacturer to ensure the performance of the system meets the products intended use. A factory-trained representative (direct-employee of the MFG) shall periodically visit the job site and review installation. The mechanical joint manufacturer will train the mechanical contractor’s field and fabrication shop installers in accordance with proper piping practices and manufacturer’s recommended installation methods. Mechanical Subcontractor shall use only manufacturer’s approved mechanical joining tools, equipment and methodology for all piping installed in a system.
    f. Mechanical Subcontractor shall use the same mechanical joining method for all piping installed in a system.
    g. Provide adequate valving to ensure major runs of mechanically joined piping can be isolated. *At a minimum, provide isolation valves on all CHW & HHW piping mains (regardless of joining method-welding included) where these systems cross a building expansion joint*.

h. Piping headers shall be routed over corridors or common areas for access where possible. Route piping as to not impede access to existing or new equipment that may be installed above. Minimize piping runs over escalator wells and other spaces that cannot be accessed from a standard scissor lift.

i. Cooling coil condensate will be routed to sanitary system (floor sinks, hub drains or mop sinks). Condensate piping shall be type L copper.

j. Refrigerant piping shall not be assembled using any mechanical pipe joining methods.

k. Pipe insulation shall be rigid fiberglass pipe insulation with all-service jacket vapor barrier. Piping located outside and in unconditioned areas (typically found on ramp, apron, baggage and train levels) shall be closed cell covered with aluminum jacketing.

l. New piping shall be thoroughly cleaned and flushed before placing into service.

m. Avoid routing CHW/HHW piping in electrical and MDF-IDF rooms. No mechanical joints on any piping that must run thru critical IT and electrical rooms

n. Labeling: Provide color coded labeling with directional arrows for all CHW & HHW piping

11.0 Plumbing Materials and Equipment

A. Sanitary, Storm and Kitchen Waste and Vent Piping

1. Sanitary waste and vent and storm piping shall be service weight cast iron pipe and fittings with factory asphalted coating.

a. Underground piping shall be hub and spigot with push-on compression joints with neoprene gaskets.

b. Above ground piping shall be no-hub joints with stainless steel bands and neoprene sealing sleeve.

B. Kitchen (greasy) waste, from dishwasher, floor drains, floor sinks, three compartment sink, mop sink and food grinder wastewater to exterior grease interceptor shall be stainless steel piping with hub and spigot DWV fittings with push on joints. Provide joint restraints as recommended by the manufacturer.

C. Domestic Water Piping

1. Potable water piping shall be type “L” copper.

2. Fittings 4” and smaller shall be solder using 95/5 lead free solder or press fittings with neoprene “0” ring.

3. Fittings larger than 4” shall be rolled groove.

4. Fittings 4” and less shall be press fitting with neoprene “0” ring.

D. Natural Gas Piping

1. Above ground gas piping shall be schedule 40 black steel.

a. Gas piping in return air plenum and larger than 2” shall be welded.

b. Gas piping 2" and smaller shall be threaded.

c. Above ground piping exposed outdoors shall be coated and wrapped or painted with a minimum two coats of yellow epoxy paint.

2. Underground gas piping.
    a. Outdoors at building entrance, schedule 40 black steel piping with threaded or socket welded fittings and coated with protective coating and wrapping.
    b. In concealed locations shall not have unions, fittings or couplings unless tubing is brazed, piping is welded, or fittings are listed for use in concealed spaces.
    c. Below slab piping shall be installed in a trench or be contained with containment piping vented to the exterior.

E. Insulation
1. Domestic cold water, 1” thick fiberglass pipe insulation
2. Domestic hot and hot water return, 1” thick fiberglass pipe insulation.
3. Domestic water piping exposed in kitchen or wash down areas shall be “1” for cold and 1" for hot and hot water return closed cell insulation with aluminum jacket.
4. Domestic water piping exposed outdoors will be heat traced and insulated with a minimum of 1” insulation and aluminum jacket.
5. Roof drain body and horizontal piping 1/2” duct wrap.6’
6. Sanitary drainage, p-trap and horizontal piping, serving HVAC condensate, ice machines and ice boxes, shall be insulated the same as roof drains and horizontal piping.
7. P-traps, sanitary piping, and kitchen piping, (GW), exposed to freezing shall be heat traces and insulated with aluminum jacket.

F. Water Heaters
1. Water Heaters shall be electric where possible or approved by DOA

12.0 Fire Protection Materials and Equipment

A. Fire Protection Piping
1. All components of the fire protection systems and installation shall meet NFPA 13 requirements.
2. Underground piping shall be ductile iron with mechanical joint fittings and thrust blocks or tie-rods.69
3. Above ground sprinkler piping shall be schedule 40 carbon steel with welded or threaded joints and schedule 10 rolled grooved. Fittings shall be UL-listed and FM-approved for fire protection service. Mechanical Grooved fittings and couplings which are UL-listed and FM-approved are permitted.
4. All dry pipe sprinkler systems shall be schedule 40 galvanized steel.

B. Fire Protection Equipment
1. Wet sprinkler systems shall be designed through an alarm check valve in lieu of a straight way check valve with flow switch.
2. Dry sprinkler system shall be designed through a dry alarm valve with air compressor.

C. Sprinkler heads
1. Concealed type sprinkler heads shall be in sheet rock ceilings and 2X4 lay-in

ceiling (at 1/2 points).

2. Semi-recessed heads shall be used in 2X4 lay-in ceiling (at 1/2 points)
3. Upright heads shall be used for areas without ceiling or for dry systems.
4. Concession can use any UL, FM approved head in their space, except sprinkler heads designated for residential applications

Appendix A - Standard Multizone Sequence

1.0 Standard Multizone Sequence

All setpoints, values, and time delays referenced are initial values that must adjustable

A. Occupied-unoccupied mode control:

1. Air handling unit (AHU) default is a 24/7 run schedule, where supply fan runs continuously.

B. Start-stop control:

1. Provide hand-off-auto switch. In auto position, the air handling unit shall start. Upon receiving a start command, the smoke damper shall open, and minimum outside air damper shall open to its minimum position. After the smoke damper and either the maximum outside air or return air damper are proven open via end switches, the supply fan shall start.

C. Warm up mode control:

1. The space temperatures shall be monitored and compared to the warmup setpoint (65 °F). The air handling unit will enter in warm up mode if more than 25% of zones are lower than warm up setpoint. It will remain in warm up mode until less than 15% of the boxes are less than warm up setpoint. In morning warm up mode. The air handling unit's minimum and maximum outside air dampers, relief air damper, and chilled water valve will be closed the return air damper and the preheat valves shall remain open.

D. Minimum outside air damper control:

1. Each AHU shall be provided with a minimum outside air flow (OAF) controller consisting of an air flow measuring station with active damper control.
2. Each AHU shall regulate OAF SP between two outside air cfm setpoints, from minimum occupancy/ building minimum ventilation up to maximum occupancy OAF cfm. Refer to the AHU schedule for the two minimum OAF cfm setpoints for each AHU.
3. When not in warm up or cool down mode, the minimum outside air control shall initially open to building minimum of scheduled outside air.
4. Upon a rise in any of the critical space or return CO2 sensors above setpoint (initially 900 ppm), the minimum OAF SP shall modulate between minimum and maximum values to maintain CO2 setpoint.
5. The minimum outside air damper modulates to maintain OAF at OAF SP.
6. The controls will have a building pressure control enable selector. Only if enabled, if building space static pressure falls to -0.02 in wc for more than 5 minutes, the minimum outside air flow setpoint shall be overridden between minimum and maximum OA cfm setpoint as required to maintain a positive building space static pressure setpoint of 0.02 in wc.

E. Discharge air temperature setpoint control (DAT SP):

1. The discharge air setpoint will be reset from a minimum of each unit's scheduled "duct supply temperature" (typically 52 F) to 65 F maximum based on the cooling demand of the associated terminal units.
2. If greater than 30 % of associated terminal units have flow set points that are within 95% of cooling maximum flow set point, then the discharge air setpoint will be decreased 1 deg. F every 10 minutes. If less than 20% of associated terminal

units have flow set points that are within 95% of cooling maximum flow set point, then the discharge air setpoint will be increased 1 deg. F every 10 minutes.

3. If outside air temperature (OAT) is greater than 75 F, DAT SP is set to minimum setpoint.
4. When counting terminal units, boxes serving exclusive or sensitive areas shall be given a weight of 1.5. Terminal units feeding open common areas shall be given a weight of 1.
5. If return air humidity rises above 60% for 10 minutes the discharge air setpoint will be overridden to minimum cooling temperature. When return air humidity is less than 58% for 10 minutes, the normal discharge air temperature control will resume.

F. Discharge air temperature control modes:

1. Economizer mode (maximum outside air damper):
   a. Whenever the OAT is below the economizer switchover setpoint of 65°F the unit shall operate under the economizer mode
   b. The economizer outside air damper modulates as the 1st stage of cooling control for discharge air temperature (DAT) to meet discharge air temperature setpoint (Econ mode). If the economizer damper is at 100% and the chilled water system is enabled, the chilled water valve will modulate as the 2nd stage of cooling if required (Econ + mech mode).
   c. A mixed air low limit program will modulate the maximum outside air damper to closed position on a fall in mixed air temperature below setpoint of 45 deg. F.
   d. The economizer damper shall be interlocked via hard wired connection with the freeze-stat to cut the power off for the spring return actuated damper in case temperature falls below 40°F.
2. Cooling mode
   a. When economizer is not enabled, economizer damper is closed and chilled water modulates for DAT to meet DAT SP.
1. Heating mode
   a. If economizer is active, but the damper is closed and discharge air falls below DAT SP, preheat valve will begin to control to DAT SP.
   b. The pre-heat coil hot water valve will be modulated as required to maintain a preheat discharge air setpoint above 45 deg. F. This control is always active, even during fan shutdown as a freeze protection measure.

G. Return damper and fan control:

1. Return damper position equals 100% minus the economizer damper position.
2. If a return fan exists, it will control to a plenum pressure determined at test and balance.

H. Discharge Air Pressure Setpoint Control (DAP SP)

1. Max duct pressure set point will be determined by test & balance and is the initial setpoint when the unit starts. The minimum duct pressure setpoint is 0.2 in wc.
2. The effective setpoint will modulate between the minimum and maximum to maintain all zones under 74 °F and no more than 3 zones “starved” (greater than 90% damper position).

a. If fewer than 3 zones are starved, and no zone is over 75 °F, then the duct pressure setpoint shall decrease by 0.05” every 2 minutes.

b. If greater than 3 zones are starved, or a single zone is over 75°F, than the duct pressure shall increase by 0.06” every two minutes.

c. If neither condition is true, setpoint remains unchanged.

d. Zone temperatures over 82°F are assumed to be bad readings and terminal unit is ignored in the count.

e. When counting terminal units, boxes serving exclusive or sensitive areas shall be given a weight of 1.5. Terminal units feeding open common areas shall be given a weight of 1.

I. AHU supply fan control:

1. Supply fan speed shall modulate for supply air pressure to meet DAP SP.

J. Relief fan and damper control:

1. If the building pressure control selector is enabled, upon a rise in building space static pressure above 0.05 in wc for more than 5 minutes, the relief damper shall open. After 10 minutes if space static pressure is still above 0.05 in wc and after limit switch proves the relief damper is open the relief fan shall start. The relief fan’s VSD will be modulated as required to maintain a positive static pressure discharge of 0.05 in wc. When the building space static pressure is less than 0.05-inch wc for 5 minutes, and the relief fan is at minimum speed, the relief fan will be stopped.

K. Purge mode control: (RMU units only)

1. The purge mode will be activated by a signal from the fire alarm system or manually commanded at the OWS. The minimum and maximum outside air dampers and the relief air damper will fully open, and the return air damper will fully close. Once the damper limit switches prove the OA and relief dampers are open, the supply and relief fans will be started and run at 100% speed. All VAV boxes will be open to 100%.

L. Fan shutdown:

1. The DDC controller shall verify the status of the supply fan and the relief fan via current sensing switches. Upon sensing that the supply fan is off, the DDC controller shall close the minimum and maximum outside air dampers, close the relief air damper, open the return air damper, close the chilled water valve, and send a 0% command to the supply and relief fan variable minimum and maximum outside air dampers, close the relief air damper, open the return air damper speed drives. The heating valve will continue to modulate as required to maintain a preheat discharge air setpoint of 45 deg. F.

M. Safeties:

1. A fire alarm shutdown relay will stop the unit upon receiving a signal from the fire alarm system.

2. A temperature low limit will stop the unit and open the hot water and chilled water valves upon sensing a fall in temperature below setpoint.

3. Static pressure high limit switches mounted in the supply and relief fa discharges shall stop the unit upon a rise in discharge static pressure above set point.

N. Hard wired interlocks:

1. The smoke detectors freeze protection thermostat; float switch and duct over-pressure switch shall be hard wired in the fan motor control circuit. These hardwire devices shall send a signal from an auxiliary contact to the DDC control system.
2. The smoke detectors and fire thermostat shall send a signal to the building fire alarm system. The smoke detector on the relief fan shall be hard wired to the fan motor control circuit.

O. Shutdown alarms:

The control system shall turn off the air handling unit supply fan and alarm the user interface whenever any of the following conditions occurs:

1. Motor current plus or minus 10% of full load amps for 2 minutes or longer. Full load current shall be as determined during test and balance.
2. No air flow for 2 minutes or longer.
3. Smoke or heat detected in the air handling unit.
4. Drain pan filled with condensate.
5. Freeze protection thermostat indicating freezing temperatures in air handling unit.
    a. The freeze stat should stop the supply fan, close all outside air dampers, open the hot water valve and chiller water valve.
6. Supply duct pressure exceeds 3.0 inches w.c. high limit

P. Non-shutdown alarms:

The control system shall alarm the user interface whenever any of the following conditions occurs:

1. Discharge air temperature +/- 5 deg F of setpoint for five minutes or longer.
2. Supply duct static pressure +/- 0.5 in w.c. of setpoint for 5 minutes or longer.
3. When the supply fan is operating in manual override as determined by fan operation outside the control of the control system.
4. Supply fan alarm

Appendix B - Single Zone AHU Standard Sequence

1.0 Single Zone AHU Standard Sequence

All setpoints, values, and time delays referenced are initial values that must adjustable

A. Start-stop control:

1. Provide hand-off-auto switch. In auto position, the air handling unit shall start. Upon receiving a start command, the smoke damper shall open, and minimum outside air damper shall open to its minimum position. After the smoke damper and either the maximum outside air or return air damper are proven open via end switches, the supply fan shall start.

B. Warm up mode control:

1. The space temperature shall be monitored and compared to the warmup setpoint (65 °F). The air handling unit will enter in warm up mode if the space temperature is below the warmup setpoint. The air handling unit's minimum and maximum outside air dampers, relief air damper, and chilled water valve will be closed the return air damper and the preheat valves shall remain open.

C. Minimum outside air damper control:

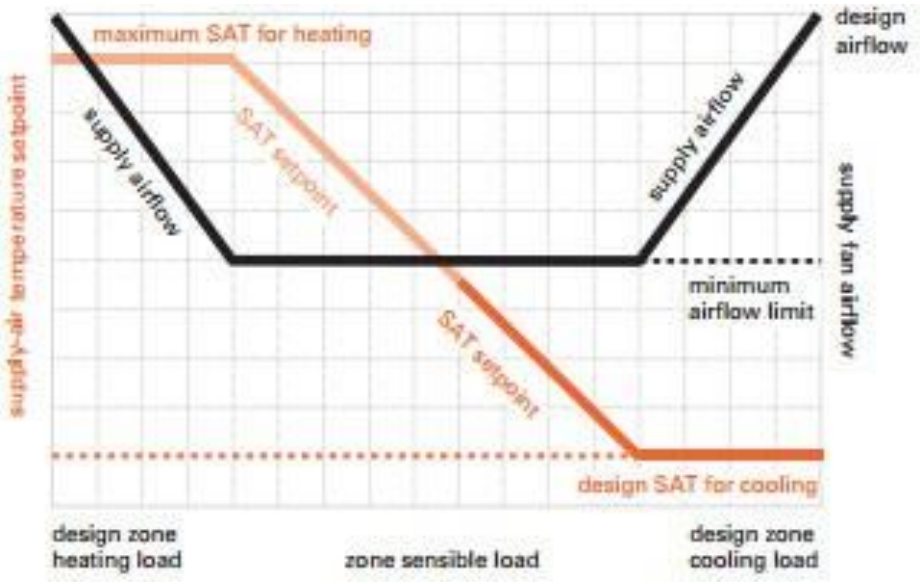
1. Each AHU shall be provided with a minimum outside air flow (OAF) controller consisting of an air flow measuring station with active damper control.
2. Each AHU shall regulate OAF SP between two outside air cfm setpoints, from minimum occupancy/ building minimum ventilation up to maximum occupancy OAF cfm. Refer to the AHU schedule for the two minimum OAF cfm setpoints for each AHU.
3. When not in warm up or cool down mode, the minimum outside air control shall initially open to building minimum of scheduled outside air.
4. Upon a rise in the return CO2 sensor above setpoint (initially 900 ppm), the minimum OAF SP shall modulate between minimum and maximum values to maintain CO2 setpoint.
5. The minimum outside air damper modulates to maintain OAF at OAF SP.
6. The controls will have a building pressure control enable selector. Only if enabled, if building space static pressure falls to -0.02 in wc for more than 5 minutes, the minimum outside air flow setpoint shall be overridden between minimum and maximum OA cfm setpoint as required to maintain a positive building space static pressure setpoint of 0.02 in wc.

D. Return damper and fan control:

1. Return damper position equals 100% minus the economizer damper position.
2. If a return fan exists, it will control to a plenum pressure determined at test and balance.

E. Zone temperature control (heating/cooling valves and fan speed)

1. In this sequence, zone temperature can refer to return temperature OR zone temperature depending on the operator selection.
2. Graphically, the zone temperature control will operate per the below diagram and as described in this section:



F. Mode Selection and Operation:

1. Cooling Mode: The AHU will operate in cooling mode, when zone temperature is greater than cooling mode enable setpoint (73 °F).

   a. Discharge Air Temperature Setpoint:

      i. At minimum fan speed, the discharge air temperature setpoint will modulate between cooling minimum setpoint (52 °F) and heating maximum setpoint (90 °F) to maintain zone temperature at zone cooling effective setpoint (74 °F).

   b. Discharge Air Temperature Control:

      i. Whenever the outside air temperature is below the economizer switchover setpoint of 65°F the unit shall operate under the economizer mode.

      ii. The economizer outside air damper modulates as the 1st stage of cooling control for discharge air temperature (DAT) to meet discharge air temperature setpoint (Econ mode). If the economizer damper is at 100% and the chilled water system is enabled, the chilled water valve will modulate as the 2nd stage of cooling if required (Econ + mech mode).

      iii. A mixed air low limit program will modulate the maximum outside air damper to closed position on a fall in mixed air temperature below setpoint of 45 deg. F.

      iv. The economizer damper shall be interlocked via hard wired connection with the freeze-stat to cut the power off for the spring return actuated damper in case temperature falls below 40°F.

      v. When economizer is not enabled (mech mode), economizer damper is closed and chilled water modulates for discharge air temperature to meet setpoint.

      vi. The preheat valve discharge air temperature control is deactivated in cooling mode. However, the preheat valve control to maintain mixed air temperature above 45 °F always remains active in all modes.

c. Supply Fan Speed:

i. In cooling mode, the fan speed starts at minimum fan speed (50%). If the discharge air temperature setpoint has been at minimum (52°F) for 10 minutes, it will hold that minimum setpoint, and supply fan speed control will become primary control. It will modulate fan speed to maintain zone cooling effective setpoint (74°F).

ii. If load drops and fan speed remains at minimum for 10 minutes, fan speed control will return to being held at minimum speed, and discharge air temperature setpoint will return to the primary zone temperature control, modulating for zone temperature to equal 74 °F cooling setpoint.

iii. If a supply air flow station exists, the minimum and maximum fan speeds referenced in this sequence can instead be % of maximum air flow. In this case, the fan speed modulates to control actual supply flow to meet supply flow setpoint.

2. Heating Mode:

The AHU will operate in heating mode, when zone temperature is less than heating mode enable setpoint (69°F).

a. Discharge Air Temperature Setpoint:

i. At minimum fan speed, the discharge air temperature setpoint will modulate between cooling minimum setpoint (52 °F) and heating maximum setpoint (90 °F) to maintain zone temperature at zone heating effective setpoint (68 °F).

b. Discharge Air Temperature Control:

i. The economizer damper and chilled water valves are closed, and the return damper is open in heating mode.

ii. The preheat valve controls discharge air temperature to setpoint.

c. Supply Fan Speed:

i. In heating mode, the fan speed starts at minimum fan speed (50%). If the discharge air temperature setpoint has been at maximum (90°F) for 10 minutes, it will hold that maximum setpoint, and supply fan speed control will become primary control. It will modulate fan speed to maintain zone heating effective setpoint (68°F).

ii. If heating load drops and fan speed remains at minimum for 10 minutes, fan speed control will return to being held at minimum speed, and discharge air temperature setpoint will return to the primary zone temperature control, modulating for zone temperature to equal 69 °F heating setpoint.

3. Satisfied mode: The AHU will operate in satisfied mode if zone temperature is in between heating (69 °F) and cooling enable (73°F) setpoints.

a. In satisfied mode, the economizer damper, hot water valve, chilled water valve all remains closed. The return damper opens, and the fan runs at minimum speed setpoint (50%).

G. Unoccupied mode control

1. Unoccupied mode is scheduled during lower occupancy times of 11 PM to 4 AM.

2. Fan continuously runs with same sequence as occupied. Only difference is new set points:

a. Unoccupied cooling enable setpoint = 76 °F

b. Unoccupied effective cooling setpoint = 77 °F

c. Unoccupied heating enable setpoint = 68 °F

d. Unoccupied effective heating setpoints = 67 °F

e. Unoccupied minimum fan speed = 25%

H. Relief fan and damper control:

1. If the building pressure control selector is enabled (operator can adjust disable/enable mode), upon a rise in building space static pressure above 0.05 in wc. for more than 5 minutes, the relief damper shall open. After 10 minutes if space static pressure is still above 0.05 in wc. and after limit switch proves the relief damper is open the relief fan shall start. The relief fan's VSD will be modulated as required to maintain a positive static pressure discharge of 0.02 in wc. When the building space static pressure is less than 0.05 in wc, the relief fan is at minimum speed, the relief fan will be stopped. The relief air damper will be modulated as required to maintain the building space static pressure setpoint determined by the test and balance contractor.

I. Purge mode control: (RMU units only)

1. The purge mode will be activated by a signal from the fire alarm system or manually commanded at the OWS. The minimum and maximum outside air dampers and the relief air damper will fully open, and the return air damper will fully close. Once the damper limit switches prove the OA and relief dampers are open, the supply and relief fans will be started and run at 100% speed.

J. Fan shutdown:

1. The DDC controller shall verify the status of the supply fan and the relief fan via current sensing switches. Upon sensing that the supply fan is off, the DDC controller shall close the minimum and maximum outside air dampers, close the relief air damper, open the return air damper, close the chilled water valve, and send a 0% command to the supply and relief fan variable minimum and maximum outside air dampers, close the relief air damper, open the return air damper speed drives. The heating valve will continue to modulate as required to maintain a preheat discharge air setpoint of 45 deg. F.

K. Safeties:

1. A fire alarm shutdown relay will stop the unit upon receiving a signal from the fire alarm system.

2. A temperature low limit will stop the unit and open the hot water and chilled water valves upon sensing a fall in temperature below setpoint.

3. Static pressure high limit switches mounted in the supply and relief fa discharges shall stop the unit upon a rise in discharge static pressure above set point.

L. Hard wired interlocks:

1. The smoke detectors freeze protection thermostat; float switch and duct over-pressure switch shall be hard wired in the fan motor control circuit. These hardwire devices shall send a signal from an auxiliary contact to the DDC control system.

2. The smoke detectors and fire thermostat shall send a signal to the building fire alarm system. The smoke detector on the relief fan shall be hard wired to the fan motor control circuit.

M. Shutdown alarms: the control system shall turn off the air handling unit supply fan and alarm the user interface whenever any of the following conditions occurs:

1. Motor current plus or minus 10% of full load amps for 2 minutes or longer. Full load current shall be as determined during test and balance.
2. No air flow for 2 minutes or longer.
3. Smoke or heat detected in the air handling unit.
4. Drain pan filled with condensate.
5. Freeze protection thermostat indicating freezing temperatures in air handling unit.
    a. The freeze stat should stop the supply fan, close all outside air dampers, open the hot water valve and chiller water valve.
6. Supply duct pressure exceeds 3.0 inches w.c. high limit

N. Non-shutdown alarms:

The control system shall alarm the user interface whenever any of the following conditions occurs:

1. manual override as determined by fan operation outside the control of the control system.
2. Supply fan alarm
3. Zone temperature +/- 3 deg F of setpoint.

Appendix C - Standard Terminal Unit Control Sequence

1.0 Standard Terminal Unit Control Sequence

2.0 Zone temperature sensor shall modulate terminal unit air damper between scheduled maximum and minimum primary cooling air flow in response to space cooling setpoint, initially 74 °F.

3.0 On fall in space temperature below 68 °F after minimum cooling air flow has been reached, the terminal unit hot water valve shall modulate open to maintain heating setpoint (initially 68 °F). If scheduled minimum heating cfm is greater than scheduled minimum cooling cfm, increase VAV box cfm to minimum heating cfm setpoint after heating valve is activated.

4.0 DDC system will prevent the terminal unit from going to heating flow or opening the hot water valve if secondary hot water system is not enabled.

5.0 The zones will be scheduled unoccupied between 11 pm and 4 am. They will follow the same sequence but control to unoccupied cooling SP (77 °F) and unoccupied heating SP (67 °F) and separate unoccupied cooling min cooling air flow and unoccupied heating air flow.

A. Note:

   In order for the air handlers to properly respond to terminal units, there are several air handler logic tables and interlock programming that must be updated on the Johnson Controls NAEs even if one terminal unit is installed or upgraded. The corresponding terminal unit points must be added to the below:

B. VAV Counts LCT

C. Purge-INT

D. HTGMODE (Interlock)

E. Warmup-LCT

F. Schedule-INT

G. Zone temp warnings for 2.5 deg above effective cooling setpoint or below effective heating setpoint

H. Delete any no longer in service boxes from the system

I. Update all graphics including floor plans

J. Ensure that key flow and temperature setpoints for occupied and unoccupied are exposed. Refer to typical points list and naming convention.

K. All terminal unit point names must have the air handler and box number included. For example:

   1. RMU-95A-BL-V04.ZN-T or RMU-95A-BL-V04.EFFCLG-SP

      a. Points labeled as only ZN-T and EFFCLG-SP without the prefix is not acceptable.

Appendix D - BMS Points Standard Lid Details

Naming convention example	Description	Additional Parameters
VVR-MT-01-2-01-AL.HTG-EN	Box Heating Enable Command	
VVR-MT-01-2-01-AL.CLG-MAXFLOW	Cooling Max Flow Setpoint	
VVR-MT-01-2-01-AL.SA-F	Supply Air Flow	
VVR-MT-01-2-01-AL.ZN-T	Zone Temperature	
VVR-MT-01-2-01-AL.EFFHTG-SP	Effective Heating Temp Calc Setpoint	
VVR-MT-01-2-01-AL.DA-T	Discharge Air Temperature	
VVR-MT-01-2-01-AL.DPR-O	Supply Air Damper Output	
VVR-MT-01-2-01-AL.SAFLOW-SP	Supply Air Flow Calculated Setpoint	
VVR-MT-01-2-01-AL.EFFCLG-SP	Effective Cooling Temp Calc Setpoint	
VVR-MT-01-2-01-AL.OCC-SCHEDULE	Occupancy Schedule	
VVR-MT-01-2-01-AL.SYSTEM-MODE	System Mode	Cool only, heat only, purge, etc.
VVR-MT-01-2-01-AL.ZNT-SP	Common Setpoint	
VVR-MT-01-2-01-AL.ZN-Q	Zone Quality	CO2
VVR-MT-01-2-01-AL.ZNQ-ALMSP	Zone Quality Alarm Setpoint	
VVR-MT-01-2-01-AL.HTG-O	Heating Output	
VVR-MT-01-2-01-AL.CLGOCC-SP	Occ Cooling Setpoint	
VVR-MT-01-2-01-AL.CLGUNOCC-SP	Unocc Cooling Setpoint	
VVR-MT-01-2-01-AL.HTGOCC-SP	Occ Heating Setpoint	

VVR-MT-01-2-01-AL.HTGUNOCC-SP	Unocc Heating Setpoint	
VVR-MT-01-2-01-AL.CLGOCC-MINFLOW	Occ Cooling Min Flow Setpoint	
VVR-MT-01-2-01-AL.HTGOCC-MINFLOW	Occ Heating Min Flow Setpoint	
VVR-MT-01-2-01-AL.WC-C	Warmup Cooldown Status	
VVR-MT-01-2-01-AL.TUNING-RESET	Application Tuning Reset	
VVR-MT-01-2-01-AL.AUTOCAL-C	Autocalibrate Commnad	
VVR-MT-01-2-01-AL.UNITEN-MODE	Unit Enable Mode	
VVR-MT-01-2-01-AL.ZNT-STATE	Zone Temperature Status	Cooling, heating, satisfied, etc.
VVR-MT-01-2-01-AL.CLGUNOCC-MINFLOW	UnOcc Cooling Min Flow Setpoint	
VVR-MT-01-2-01-AL.HTGUNOCC- MINFLOW	UnOcc Heating Min Flow Setpoint	
VVR-MT-01-2-01-AL.WC-ADJ	Warm Cool Adjust	

Table 1 – Passenger Terminals – HVAC Operating Parameters

Table 1 – Passenger Facilities – HVAC Operating Parameters

Passenger Facilities
HVAC Operating Parameters

Space/Function	Indoor Design Condition				HVAC Load Data			
	Summer- ^{0}F	% RH	Winter- ^{0}F	% RH	People FT^2/PPL	Outside Air CFM/PPL	Lights Watts/FT^2	Equipment Watts/FT^2
Hold Rooms	74	50	70	-	200 PPL/Gate	10	1.5	2.0
Interior Corridors	74	50	70	-	100 FT^2/PPL	10	1.5	1.5
Concessions (Restaurant)	74	50	70	-	30 FT^2/PPL or Count	10	3.0	10.0
Concessions (Retail Store)	74	50	70	-	45 FT^2/PPL or Count	10	6.0	3.0
Crown Room	74	50	70	-	45 FT^2/PPL or Count	20	3.0	3.0
Break Room/ Group Room	74	50	70	-	100 FT^2/PPL or Count	10	1.5	1.5
Office/ Administration	74	50	70	-	100 FT^2/PPL or Count	20	1.5	1.5
Third Level Tenant Space	74	50	70	-	100 FT^2/PPL	20	2.5	2.5
Smoking Room	74	50	70	-	15 FT^2/PPL	60	1.5	1.5
Apron Level (Air Conditioned Spaces)	74	50	70	-	100 FT^2/PPL or Count	20	2.5	1.5
Classroom/Training/Conference	74	50	70	-	30 FT^2/PPL or Count	20	2.5	1.5
Toilet Room/Locker Room	74	50	70	-	0	0	1.5	0.0
Storage Area	74	50	70	-	0	0	1.5	1.0

OUTDOOR DESIGN CONDITIONS

Summer 94 ^{0}F DB/ 74 ^{0}F WB

Winter 17 ^{0}F DB

Cooling Supply Air Design

Supply air Delta T (Space Temp- Leaving Coil Temp): 23 ^{0} F

Chilled & Hot Water Design: Supply- Return Delta T

Secondary CHW: 16 ^{0}F

Air Handling Unit CHW: 18 ^{0}F

Secondary HW: 40 ^{0}F

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

Electrical Engineering

Electrical Design Standards

Table of Contents

Figure Index:

Electrical Design Standards

1.0 Purpose

A. Purpose of Design Standard – Electrical

The purpose of this document is to outline the minimum design standards and installation requirements for systems (electrical power, control, fire detection and others), which are installed to serve various spaces throughout the Central Passenger Terminal Complex (CPTC) and other DOA facilities to include Landside/Airside New Construction, Modifications, Concession and Tenant spaces at Hartsfield-Jackson Atlanta International Airport (H-JAIA or "Airport").

2.0 Codes and Standards

A. Applicable Codes, Standards & Circulars

All design work shall be performed "In Accordance With" (IAW) generally accepted, professional principles and practices for electrical engineering and in compliance with all applicable Department of Aviation (DOA), Planning & Development (P&D) Facilities/Landside/Airside New Construction and Modification Standards included in this document. Compliance with the latest Federal, State and City of Atlanta Codes, Standards and Regulations along with the latest Advisory Circular (AC) for Airport Projects is required. The codes, standards and practices listed herein generally apply to airport projects. Other codes, standards or practices that are more specific will be referenced within a specific section (the list below is for reference and not all inclusive).

1. Codes
    a. National Fire Protection Association (NFPA) 70 National Electrical Code
    b. NFPA 72 National Fire Alarm Code
    c. NFPA 101 Life Safety Code
    d. NFPA-110 Emergency and Standby Power Systems
    e. Standard Building Code
    f. NFPA 780 Standard for the installation of Lightning Protection System
    g. Georgia State Minimum Standard Electrical Code
    h. Occupational Safety and Health Administration (OSHA)
2. Standards
    a. American National Standards Institute (ANSI)
    b. Institute of Electrical and Electronics Engineers (IEEE)
    c. Underwriters Laboratories (UL)
    d. Illuminating Engineering Society (IES) Lighting Handbook

e. National Electrical Manufacturers Association (NEMA)
f. Hartsfield Jackson Atlanta International Airport, City of Atlanta, Department of Aviation – Aviation Information systems, (AIS) Infrastructure Standards (latest revision)
g. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

3. Circulars
   a. Federal Aviation Administration (FAA), Series - 150 Advisory Circular (AC) for Airport Projects (only AC numbers are indicated in this standard)

3.0 General Drawing Requirements

A. Facilities Electrical Drawings and Master Drawings (including systems)

Table 1: is a recommended list of "Drawing Types" required to illustrate the design scope and to be issued as acceptable DOA construction "As-Built" project deliverables.

Master drawing deliverables are designated below

Table 1 - Drawings			
Project Electrical/System As-Built Drawing Types	**Scale**	**Master Deliverables**	**Deliverable Format**
Legend	NTS		**Acceptable Electronic Formats for drawings:** AutoCAD (.dwg) Revit (.rvt) Adobe (.pdf) BIMS (contact DOA BIMs manager for specific details). Early coordination with the DOA Project Manager is required to establish the acceptable
Electrical Site Plan	1 inch = 20 feet		
Lightning Protection and Counterpoise Composite Plan	1 inch = 20 feet		
Lightning Protection Details	NTS		
Grounding Site Plan	1 inch = 20 feet		
Grounding Riser diagram(s)	NTS		
Grounding Details	As required		
Primary Electrical System: One-line/Single-line and/or Riser Diagrams -Full and partial	NTS	**Master Drawing (3.B.2.d)**	
Power Electrical riser diagram (for multi-story buildings)	NTS	**Master Drawing (3.B.2.d)**	
Power Layout floor plans	¼ inch = 1.0 feet 1/8 inch=large spaces	**Master Drawing (3.B.2.d)**	
Power layout enlarged floor plans, specifically electrical vaults, electrical rooms, electrical closets	¼ inch = 1.0 feet All plans listed shall be drawn to scale	**Master Drawing (3.B.2.d)**	

Panelboard schedules and Directories	NTS	**Master Drawing (3.B.2.d)**	drawing format for project deliverables. **Acceptable Hard Copy Formats for drawings:** Full and/or Half size drawings shall be printed to scale when requested.
Site Lighting Plans	1 inch = 20 feet		
Site Lighting Photometrics Plans (when required)	1 inch = 40 feet		
Interior Lighting Plans	¼ inch = 1 feet 1/8 inch=large spaces		
Interior Lighting Photometric Plans (when required)	As required		
Lighting fixture schedule	NTS		
Special Systems layout Floor Plans (Fire Alarm,)	¼ inch = 1.0 feet 1/8 inch=large spaces		
Special Systems Details	As required		
Low Voltage Switchgear, Switchboard and Motor Control Center Elevation and Details	As required	**Master Drawing (3.B.2.d)**	
Miscellaneous Elementary and Wiring Diagrams (when required)	NTS		
Electrical Equipment List for (EPMS)	NTS	**Master Drawing (3.B.2.d)**	
Electrical Power Monitoring System (EPMS) user interactive graphic screen/input lists	NTS	**Master Drawing (3.B.2.d)**	
Electrical Power Monitoring System (EPMS) One-line and/or Riser Diagrams	NTS	**Master Drawing (3.B.2.d)**	
Power Duct Bank Plan and Profile (Civil Work Drawing)	1 inch = 50 feet horizontal		
Equipment Pad details for Switchgear, Switchboard, Transformer, Motor Control Center and floor mounted equipment	As required		
Electric Manhole Plan, Details and Sections	As required		

Note: electrical symbols and equipment placed on drawings shall match the layout plan drawing scale.

B. Electrical and System Drawing Updates

1. The Design Service Providers (DSP) shall request and update the Department of Aviation's Facilities Master Electrical/System Drawings along with prepare and deliver stand-alone Final Project Electrical/System "As-Built" drawings whenever a project is performed at the Central Passenger Terminal Complex (CPTC) and a DOA property. Facilities Master Electrical/System Drawings (shown on Table 1), and the required stand-alone Final Project Electrical/ System "As-Built" drawings shall be developed and updated for each concourse/building located within the CPTC and DOA property as described within this design standard and IAW the contract project Scope of Work (SOW)

documents. All document requested for check-out/check-in shall be through the PMWeb web-based Project Management software system, IAW P&D Policies and Procedure 02-002 “Document Control” (latest revision).

2. Definitions:

   a. **CPTC**: The area within the Hartsfield-Jackson Atlanta International Airport (HJAIA) referred to as the Central Passenger Terminal Complex (CPTC) to include all Concourse’s and Terminal buildings.

   b. **Design Service Provider (DSP):** is a service organization contracted to provide electrical system design solutions and services starting at the design initiation phase and ending at a successful system turn over. The Design Service Provider is responsible for the project design as stipulated in the Design Contract and Task Orders.

   c. **Electrical Construction Drawings**: designated as working drawings issued before actual construction begins. Construction drawings are also known as Issued for Construction (IFC) drawings during the last phase of the design effort.

   d. **Facilities Master Electrical/System Drawings**: Facilities Master Electrical/Systems drawings are revised drawings which reflect ALL changes created by every project performed at the CPTC and a DOA property. Drawings considered “Master Drawings” to be incorporated into the Facilities Master Electrical/Systems are defined on Table 1. Drawings are DSP contract deliverables and independent of the Final Project Electrical/System “As-Built” drawings.

   e. **Final Project Electrical/System As-Built drawings:** Final project Electrical/System “As-built” drawings are independent of the Facilities Master Electrical/System Drawings and are project specific. The project “As-Built” drawings shall reflect all changes made during the construction process and provide an exact rendering of the finished project. Final project “As-Built” drawings are contract deliverable documents and shall be prepared and managed IAW, P&D Policies and Procedure 08-008 “Project As-Built Documentation” (latest revision). Drawings are DSP contract deliverables and independent of the Facilities Master Electrical/System Drawings.

   f. **Progress Electrical As-Built drawings**: progress electrical “As-built” drawings (also denoted as marked up-to-date or red-line drawings) are the revised sets of paper copy drawings on the Jobsite which provides an accurate record of all deviations between work as shown and work as installed during construction. All “As-Built” drawings shall be prepared and managed IAW, P&D Policies and Procedure 08-008 “Project As-Built

Documentation" (latest revision).

C. Drawing Request and Revision Process

1. Project Initialization:
   a. Upon a project initialization, the DSP shall contact the DOA's Document Control Specialist (DCS) IAW, P&D Policies and Procedure 02-001 "Document Control" (latest revision) who is responsible for managing all project related documents during the project life cycle.
   b. The DSP is responsible for identifying all Facilities Master Electrical/Special Systems drawings required for project and Master Drawing revisions during project initialization.
2. Facilities Drawing Request:
   a. The DSP shall request from the DCS the Facilities Master Electrical/System Drawings pertinent to the design modification or new construction project.
   b. The DCS shall forward the drawing request to the DOA Electrical Department Design Manager (or designee) for review and approval when required.
   c. The revision number on the issued drawing shall be the current revision number or in general, revision X (such as revision 1).
3. Drawing Revisions
   a. The DSP shall establish revision completion dates to issue the Final Project Electrical/System "As-Built" drawings, and the revised Facilities Master Electrical/System Drawing(s). The DSP shall contact the Electrical Engineering Department Design Manager (or designee) on the established completion dates for both and provide progress status updates.
   b. Upon completion of a new construction or modification projects, the DSP shall revise the Progress Electrical "As-Built" drawings to reflect all changes made during construction which will become the official signed-off "Final Project Electrical/System "As-Built" drawing submittal.
   c. Final Project Electrical/System "As-Built" Drawings shall be delivered to DOA through the PMWeb web-based Project Management software system IAW, P&D Policies and Procedure 02-001 "Document Control". The drawing(s) shall be in the software format identified on Table 1 with (1) one hard copy sealed and signed by a P.E. (Electrical) registered in Georgia. Drawings shall be stamped "As Built".

d. After completion and submittal of the Final project Electrical/System "As-Built" drawing deliverables the DSP shall request and check-out the Facilities Master Electrical/System Drawings to be revised IAW the details outlined in this design standard and as described in the contract project Scope of Work (SOW) document. The DOA Electrical Design Manager (or designee) shall follow up with the DSP during the check-out period (predetermined time) to assess if the procedural requirements are being adequately implemented. The requested check-out period shall include adequate time to perform a quality review of the updated Facilities Master Electrical/System Drawings prior to the revised documents being check-in to the document control system.

e. The Final Project Electrical/System "As Built" Drawings and revised Facilities Master Electrical/System Drawings shall include the following information in the revision blocks:

   i. New revision number, generally Revision number enclosed in a triangle (revision number shall increase with each submittal),

   ii. Revision date,

   iii. Engineer's initials,

   iv. A brief description of the revision such as project name and WSB number,

   v. Sealed and signed by a P.E. (Electrical) registered in Georgia.

4. Facilities "As Built" and Master Electrical Drawings Deliverables

   a. The required Final Project Electrical/System "As Built" and Facilities Master Electrical/System drawing deliverables identified on Table 1 shall be officially transmitted to the DOA through the PMWeb web-based Project Management software system IAW, P&D Policies and Procedure 02-001 "Document Control. The project "As-Built" Drawings shall be comprised at a minimum all Electrical/System Drawings included in the issued for construction set along with the Facilities Master Electrical/System Drawings identified in Table 1.

4.0 Design Requirements

A. General Design Requirements

1. Keep abbreviations to a minimum.
2. Use only standard technical abbreviations from the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE) on all drawings.
3. When “In Accordance With” (IAW) is annotated, it is referring to an agreement or conformity with an authority, code, standards, rules, procedures, etc.
4. All Electrical Components, Devices, and Accessories used as the basis of design shall be Underwriters Laboratories (UL) Listed as defined in NFPA 70, NEC, Article 100. The contract specifications shall identify the UL listed requirements for all electrical components, devices, and accessories.

B. Administrative Design Requirements

1. The DSP shall resolve code conflicts found during design and construction. The more stringent applicable portion of conflicting codes shall be used unless a written waiver letter with concise details and supporting evidence is submitted to the DOA Assistant Director (or designee) through the PMWeb web-based Project Management software system IAW, P&D Policies and Procedure 02-001 “Document Control” (approval shall be granted prior to performing any work).
2. The DSP shall provide details on the design contract documents to include raceways, wires, cables, equipment, controls, grounding, wiring diagrams and other details required to make complete electrical, control and all ancillary systems operational.
3. Design drawings are generally diagrammatic and are not intended to show exact locations of all raceways runs, outlet boxes, junction boxes, pull boxes, etc. In general, exact locations shall be determined and coordinated in the field which shall be illustrated on the “As-Built” construction documents. The locations of equipment, appliances, fixtures, raceways (conduit, cable tray, busduct, junction boxes, wireways, outlets boxes, and similar devices) shown on the drawings are approximately located to obtain accurate cost estimates unless “to-scale” placement is specifically required by the design to illustrate and avoid constructability design conflicts with the following exception:
   Exception: All electrical rooms, electrical closets and major equipment placed within these electrical rooms such as switchgear, switchboards, distribution panelboards, panelboards, etc. shall be drawn “to scale”.
4. Where circuits are shown as "homeruns" on drawings, place notes on contract

documents indicating that all necessary fittings, supports, and boxes shall be provided to make complete raceway installations IAW code requirements.

5. The DSP shall show circuit layouts on drawings; however, layouts are not required to show all fittings, or all installation details. Details illustrating connections to equipment shall be shown as required, and IAW the accepted shop and manufacturer's design drawings.

C. Landside Technical Design Requirements

1. Raceway

a. This Design Standard considers a Raceway System to consist primarily of cable tray, conduit and necessary hardware used to support cable runs between electrical equipment and physical protection to the cables. IEEE 422 is considered a valid reference when designing/installing a similar raceway system as described in this standard.

b. Electrical metallic tubing (EMT) may generally be used for dry accessible concealed installations; however, Rigid metal conduit (type RMC) shall be used in most cases for exposed installations with the following exception:

Exception: When raceway is not subject to any physical or mechanical damage EMT can be used for exposed installations. When specified, EMT shall be used with compression fittings (coupling) and installed in accordance with the NEC.

c. EMT couplings with set screws are not allowed.

d. EMT shall be installed with appropriate fittings if used as an equipment grounding conductor IAW NEC and IEEE 422.

e. Surface nonmetallic raceways shall not be permitted.

f. Only cast metal boxes shall be used for exposed installation.

g. Minimum conduit size to route electrical cables shall be ¾". This criterion applies to all HJAIA CPTC and DOA facilities. See FAA circulars for airside requirements.

h. Signal cables may be installed in cable tray; however, J-hooks, D-rings and Bridal Rings are not allowed.

i. Each three-phase circuit shall be run in a separate Raceway unless otherwise shown on the contract drawings.

j. When PVC is specified, the schedule type shall be provided.

k. Supporting raceways from cable trays/supports, wireways/ supports, and from

another raceway including supports is not allowed.

l. Underground Raceway: All underground, direct buried, encased conduits, duct banks and other underground raceways installed at HJAIA CPTC and DOA facilities to include abandoned conduits capped in place, shall be equipped with “Electronic Utility Markers”. The DSP shall recommend to DOA the type of “Electronic Utility Markers” which will offer the best accuracy for locating underground utilities, complies with local codes/standards, industry color codes and are UL certified. Prior DOA approval is required before installation.

2. Wiring & Cables

a. Conductor/Wiring: All wire and cables shall be Underwriter’s Laboratories (UL) listed and shall meet all national, state, and local code requirements for their application. Insulated wire and cables shall conform to the minimum requirements of the Insulated Cable Engineer Association (ICEA) Standards. Conductivity shall be IAW the standardization rules of the Institute of Electrical and Electronics Engineers, Inc. (IEEE).

b. Cable Definitions

i. **Power**: cables are used to send energy from its source to downstream equipment.

ii. **Control and Instrumentation:** cable terminology may be used interchangeably to refer to the same cable. However, control and instrumentation cables have related functions and are used for sending signals that control equipment, as well as for measurement.

iii. **Signal:** include coaxial cables, twisted pair cables, and fiber optic cables which are used to transmit data.

c. All power, control, instrumentation and signal cables to include the following systems at a minimum: Power Systems, Fire Alarm (FA), Heating, Ventilation, Air Conditioning (HVAC), Lighting, Communication, Video Surveillance Cameras (CCTV), Access Control, Information Technology (IT), phone (data or voice) shall be routed in NEC raceways. Coordination with the project design specifications is required.

d. Branch circuit power cables (conductors) shall be minimum #12 American Wire Gauge (AWG) and shall be copper, type THHN/THWN unless otherwise noted on design documents and approved by DOA electrical.

e. Control and instrumentation cables (signal wiring) for all systems identified shall be minimum #14 American Wire Gauge (AWG) unless otherwise noted on design

documents and approved by DOA.

f. Communications Installation: Fiber Optic cabling, copper data cabling, communications conduit, pathways, grounding/bonding, firestopping, testing, and all associated task involved in communications installation, shall be designed and specified IAW Aviation Information Systems (AIS) infrastructure Standards and Telecommunications Industry Association (TIA) Standards (latest version).

g. Metal Clad (MC) cable shall only be used for final connections to light fixtures from ceiling junction boxes (less than 72 inches) or inside existing walls where concealed. MC cable is not allowed for feeder and branch circuits.

h. Feeders and service wiring shall be copper.

i. Aluminum feeders shall only be allowed for 400 Hz feeders/ branch circuits.

j. No abandoned cable or raceway due to demolition shall be allowed. Remove all the wiring, conduit, and other associated raceways back to the source. Requirements apply to interior and exterior building installations.

k. Where existing switchgear, switchboards, panelboards and other electrical components are being replaced, the associated feeders shall also be replaced.

l. No reduced sized neutrals will be allowed. Each single pole overcurrent device shall have its own separate neutral conductor.

m. Neutral conductor sizes shall not be less than the respective feeder or phase conductor sizes.

n. Multi-wire branch circuits are not allowed.

o. Include equipment grounding conductors sized per NEC with all power and control circuits over 50 volts.

p. Install computer-related circuits and receptacles separate from motor load circuits. If required by the manufacturer to minimize noise, provide a separate grounding conductor back to the branch circuit breaker for each circuit, consistent with NEC grounding criteria. Provide an isolated ground receptacle as needed.

q. All underground wirings shall be protected by conduit and concrete encasement for areas with heavy vehicle traffic such as roadways, parking lots, etc.. The minimum burial depth cover shall be IAW NEC (latest version).

r. Wiring in light pole handholes: Provide at least 18” of slack at handholes or as otherwise defined in specifications. The type of cable splicing used shall be detailed

in the project specifications and shall comply with the NEC and industry standards. See section titled “Splices” for additional details.

3. Voltage Drop Assessments
    a. The DSP shall perform voltage drop calculation (s) IAW Section 8.G and increase the conductor and conduit sizes as required. This increase shall compensate for any voltage drop concerns which will reduce the operating efficiency of motors, lights or other electrical equipment. If during construction a cable voltage drop concern is identified due to unforeseen circumstances, the electrical DSP shall re-analyze to determine a new cable size and provide results to the contractor for installation.
    b. Mid to large projects: If a substantial quantity of cables is specified, the electrical DSP shall provide a “Voltage Drop Table” and place details on the contract drawings. This table shall specify the conductor’s maximum allowable length and amperage to ensure that the electrical components can operate efficiently.
    c. Small projects: the DSP may provide voltage drop notes on drawings to identify acceptable cable sizes.
4. Splices
    a. If it is determined by the DSP construction team that a cable splice may be required or a cable replacement is more practical, this occurrence shall be brought to the attention of the DOA Design Manager (or designee) for all normal and emergency branch circuits. Splices in handholes near spouts or other water sources shall be waterproof and approval is required prior to any work being performed.
    b. Cables for life safety branch circuits shall not be splices, cable replacement is required.
5. Circuiting
    a. A shared neutral wire is not allowed.
    b. Branch circuit design for general use power receptacle outlets shall be limited as identified in section 6.B.8.
    c. Only “Life Safety” (S) circuits shall be connected to the emergency power system.
    d. Emergency Feeder Circuit Wiring: Wiring for emergency systems shall meet the requirements of NEC 700.10 (D).
    e. Maintain a minimum of four spare circuit breakers and/or spaces in existing panel boards when practical. Provide new panel boards to accommodate the circuit

excess.

f. Main circuit breakers shall be sized 25% above connected load as a minimum.

g. Provide and install dedicated electrical circuits fed from local panels (when required) to power loads for general office spaces, data centers, communications complexes that use electrically sensitive equipment (computers), data processing equipment and other similar devices.

h. Dedicated panel boards should be fed from separate feeders to the service entrance if possible.

i. For small loads explore the possibility of using existing circuits vs. proposing new circuits.

j. Circuit Loading and Metering: The following requirements shall apply to all electrical designs to include HJAIA Capitol, DOA facilities, Concessions and Tenant projects. The requirements for electrical load calculations for Criteria 1 and 2 shown below are described in section 8.C titled “Load Calculations”. The metering requirements are identified in Criteria 2 below.

   i. Criteria 1: for minor load additions provide a load calculation with conclusions and any recommendations shown on a contract drawing panelboard schedule or in a stand-alone load calculation.

   ii. Criteria 2: If Criteria 1 is not practical due to the complexity of projects, then a) obtain metered load measurement data which validates the maximum demand load for a 1-year period for input into a load calculation. If data is not available, then b) obtain services from a certified electrical contractor to place meters on equipment in question and record existing load data over a 30-day period. Either scenario a) or b) can be used when adding loads to the existing switchboards and panelboards. Once load data measurements are successfully captured and analyzed the output shall then be used as the design basis input for a formal load calculation.

   iii. The load analysis for Criteria 1 and Criteria 2 shall be performed IAW the latest edition of the NEC, article 220.87 which is a requirement for the City of Atlanta permitting department.

6. Exclusions

   a. No welding or cutting of structural steel for electrical systems is allowed unless it is specifically approved by DOA structural engineering in writing.

   b. No saw cutting of flooring to install raceway (conduits) used to route cables is allowed

for new circuits.

7. Miscellaneous Requirements

   a. Conduit Color Coding: All electrical conduits shall be identified by color-coding. Apply color-coded identification on electrical conduit in a neat and workmanlike manner and as specified in the project specifications.

   b. Conduit Labeling requirements: include requirement for the contractor to provide and install labeling for all new conduits that are connected to switchgears, switchboards, motor control centers, panelboards, junction boxes and wireways, located inside each electrical room.

      i. Labels shall be (1) inch wide, Self-Adhesive, vinyl, laminating, (waterproof when required), fade resistant black letters, "normal" font size 36 on yellow continuous tape.

      ii. Apply bands 50 feet on center along the raceway system and at each side of walls or floors, and at branches from mains.

      iii. Instructions shall be provided to the contractor that before applying any identification products to the raceway systems, components shall be cleaned of any foreign substances that could prevent permanent bonding. Attachment methods and material recommended by the manufacturer shall be followed.

      iv. Labeling shall include power source (name of switchgear, switchboard, distribution panelboard or panelboard), voltage level, circuit number and load serving.

      v. The contractor shall provide label samples to DSP and construction manager for approval prior to installation.

   c. Equipment Mounting Detail requirements:

      Prepare elevations and details to show the mounting method for all equipment such as large transformers, large junction boxes and large control cabinets. Any large equipment (example: transformer) when allowed by the NEC to be suspended from a ceiling structure, shall have an approved installation detail signed by a registered Professional Engineer (structural). Structural Mounting details are not necessary for small simple wall mounted devices, however details for the mounting height above the finished floor or above finished grade is required.

   d. Floor mounted equipment to include electrical emergency generators:

All floor mounted equipment shall be placed on housekeeping pads with details shown on the electrical layout plan drawings. Provide reinforced concrete pads for floor mounted electrical equipment or unless otherwise noted (for electrical equipment installed in the Airfield Lighting Vaults see AC 150/5340-30J). The DOA recommendation: housekeeping pads shall be nominally four (4) inches high and shall exceed the dimensions of equipment being set on them, including future sections, by six (6) inches on all sides, except when equipment is flush against a wall, then the side or sides against the wall shall be flush with the equipment. Concrete pads shall also be provided and installed for all electrical emergency generators. The DSP structural engineer shall be responsible for all housekeeping and generator pad structural calculations, elements and details.

e. Surface mounted equipment:

   Surface-mounted fixtures, outlets, cabinets, panels, etc. shall have a factory-applied finish or shall be painted as accepted by the DSP. The mounting and anchorage for surface mounted equipment to building structural elements shall be specified in project specifications and approved by the DSP structural engineer.

f. Surface mounted raceway:

   Raceways and fittings, where allowed to be installed surface mounted, shall be painted to match the finish on which it was installed. Paint and details for raceway and conduit supports shall be IAW specific project specifications.

g. Fire Barriers:

   Indicate all fire barrier penetrations on electrical plan drawing; specification shall show how the wall/barrier will be labeled.

h. Fire Stops and penetrations:

   Specify fire stopping rated sealant for electrical penetrations in fire-resistance rated walls, partitions, floors, and ceilings to maintain the fire-resistance rating. Specifically, seal all conduit penetrations at fire-rated partitions. Coordinate all conduit penetrations with architectural and structural drawings, field conditions and other trades. Provide sealing fitting to prohibit condensation and passage of gases or vapors and coordinate with the project architect and or consult with the method of sealing and sealant type.

i. Sleeves and Forms:

Provide sleeves for Raceways penetrating floors, walls, partitions, etc. Locate necessary slots for electrical work and form before concrete is poured. Provide boxed out forms for raceway penetrations only were allowed by the Architect. Fill opening after raceway installation, with equivalent material. DSP Structural engineer shall be responsible for all design details.

j. Leadership in Energy and Environmental Design (LEED) Efficiency:

Electrical equipment specified must meet energy efficiency requirements to align with LEED certification.

k. Modifications:

Electrical equipment being added to an existing electrical system requires a circuit load calculation or metering to determine the suitability of any equipment's ability to accommodate new loads and perform as intended. See sections titled "Circuit Loading and Metering" and "Load Calculations" for requirements. In addition the DSP shall analyze the Form, Fit, and Function (FFF) for all new proposed electrical equipment to ascertain the integration with existing infrastructure. FFF refers to the identification and description as follows: Form: the shape, size, dimensions, weight, and other physical parameters that uniquely characterize an item; Fit: the ability of an item to physically interface or interconnect with or become an integral part of another item and Function: the action or actions that an item is designed to perform.

l. Field verification:

Site walkdown's of facilities and equipment shall be performed prior to any additions or modifications to verify and validate existing field conditions.

m. Electrical Rooms and Electrical Closets:

i. Provide notes on electrical drawings to instruct the contractor to efficiently use wall and floor space in electrical rooms when installing new electrical equipment to maintain and reserve space for future electrical work.

ii. See section "Building Grounding System Design" for electrical room grounding.

iii. See section "Power Receptacles System Design" for requirements in or around electrical rooms and electrical closets.

iv. Electrical rooms (wall and ceilings) shall be two-hour rated. The DSP shall coordinate with the "Architectural" and "Structural" drawings for validation.

v. Smoke detectors shall be provided and installed in HJAIA electrical rooms, closets if space is not provided with sprinkler protection as defined by the Georgia State

Minimum Standard Building Code.

vi. Information Technology (IT) Telecommunication system equipment to include cabling shall not be installed in any HJAIA - CPTC and DOA property electrical rooms, except if electrical equipment is served. Electrical rooms shall not be used as an IT telecommunication room.

vii. Exit and exit access doors serving electrical rooms and working spaces shall swing in the direction of egress travel and shall be equipped with panic hardware or fire exit hardware where such rooms or working spaces contain one or more of the following: equipment operating at more than 600 volts, nominal.

viii. Electrical rooms in the CPTC shall be fitted with CyberKeys in coordination with AATC requirements.

n. MDF and IDF rooms:

The details for the HJAIA – CPTC, Main Distribution Frame (MDF) and Intermediate Distribution Frame (IDF) rooms are designed IAW, “AIS Infrastructure Standards” latest version. This standard also applies to the HJAIA - DOA external facility building telecommunication rooms. A review of this standard during all phases of design is required to ensure compliance.

8. Generators

a. The DSP shall install permanent diesel generators when required to meet the requirements of NFPA 110, Emergency and Standby Power Systems”, NEC Articles 700 “Emergency Systems”, 701 “Legally Required Standby Systems” or 702 “Optional Standby Systems.

b. Diesel generators installed shall meet EPA Tier 2 NOx emission Levels unless otherwise exempt. See DOA “Sustainability Standards” for additional EPA requirements.

c. All generators shall be installed on a generator pad. See section 4.C.7.d titled “Floor mounted equipment to include electrical emergency generators”.

d. See section 4.D.1.o for Airfield- “Emergency Generator” requirements.

D. Airfield Technical Design Requirements

1. The following sections include design standards for systems and items specific to the airfield, but Airfield Lighting Systems designs are not limited to the design standards

listed in this section. There are other sections contained within this Electrical Design Standard that will provide design standards for items that are common to both Airfield Lighting Systems Design and other facility designs. Where duplicate design standard sections common to both Airfield Lighting Systems and other facilities are covered within this design standard, the Advisory Circulars listed in this section shall govern airfield related items.

a. Airfield lighting vaults:

   Are designed to include equipment that complies with the appropriate Advisory Circulars for that equipment. Equipment designed to be installed shall also comply with AC 150/5345-53D “Airport Lighting Equipment Certification Program” (or latest revision). The configuration for electrical power feeding the Airfield Lighting Vault Facility shall be designed to meet the standards of a Continuous Power Facility as defined in AC 150/5340-30J section 13.2.1 “Continuous Load” (or latest revision). The electrical power configuration for the existing North and South Airfield Lighting Vaults and structures were sized for both equipment needs at the time of design, and potential future developments based on information provided by HJAIA Planning & Development Department.

b. Airfield Lighting Vault design details:

   The building shall be climate controlled and shall have a separately climate-controlled computer room exclusively for the ALCMS equipment. This room must have a window between the equipment area and the computer room. The vault shall have a workroom and a uni-sex restroom facility. Housekeeping pads were not previously provided for existing vault equipment locations, however, validation with the latest AC 150/5340-30J and others ACs shall take place to ensure compliance for current or future designs. The Vault shall have 10’ X 10’ roll up doors with electric operators. The roll up doors shall be aligned with inside movement areas which will allow for easy equipment installation and manipulation. The Vault shall have a paved parking area and an apron around the entire building. The Vault building shall have photocell-controlled area lighting. The Vault must have access and turn-around capability for large vehicles. See AC 150/5340-30J, section 12.13 “Vault” and AC 150/5370-10H for specific Vault requirements.

c. Airfield Lighting Vault Equipment**:**

   All switchboards, panel boards and all other electrical equipment, except Airport lighting equipment items requiring FAA Approved, shall have UL approvals. See AC

150/5345-53D “Airport Lighting Equipment Certification Program” (or latest revision).

d. Conduit/Wiring:

Wiring for airfield lighting shall be in polyvinyl chloride (PVC) conduit schedule 80 or as described in AC 150/5370-10H (or latest revision). The circuit conductors for lighting shall be L-824 Type C Underground Electrical Cable for Airport Lighting Circuits. Lighting circuits for taxiway lighting shall be 8 AWG and 6 AWG for runway lighting. Cable size is not dependent on whether it is a runway or taxiway circuit but is based on the size Constant Current Regulator that is energizing the circuit. L-824C cables (6# AWG) are used for 50KW CCRs. See AC 150/5345-7F (or latest revision) for airport lighting circuit requirements to include L-824.

e. Exposed Conduits:

All exposed conduits shall be galvanized rigid. Flexible connections shall be of the “Sealtite” type flex. All surface mounted boxes shall be cast metal. All conduits and other steel shapes shall be properly cleaned, treated, primed and painted. All wall mounted devices and equipment shall be mounted on steel supports attached to the walls. See 150/5370-10H (or latest revision) for additional requirements.

f. Under Floor Conduits:

All under floor conduits shall be 1” minimum size PVC conduit. At every location where the under-floor conduit turns up to the surface, for extension, a rigid steel conduit coupling shall be installed with the top end flush with the finished floor. All wiring for control, monitoring, FAA RVR and CCR output circuits shall be installed in under-floor conduit. Spare 4” under floor conduits shall be installed from the quarter-points of each wall, or wall section, to the Break-out Boxes. See 150/5370-10H (or latest revision) for additional requirements.

g. Constant Current Regulators (CCRs):

Primary power distribution to the 2400-volt primary CCRs shall be by a totally enclosed and properly ventilated overhead 4160 Volt bus system. CCR Primary connections to the 4160 Volt bus shall be fully enclosed, hook-stick installable and operable fuses of the proper size for each CCR. All Constant Current Regulators (CCRs) above 15 KW shall have a 2400 Volt primary and all 15 KW CCRs or below shall have a 480-volt single-phase primary. Where possible all regulators will be either 15 KW or 30 KW with a 6.6-amp output to match existing equipment and utilize internal control equipment that is interchangeable with existing similar components.

See AC 150/5345-10H (or latest revision) for specification details.

h. Regulator Junction Box/meters:

All CCRs shall have cabinet front mounted digital input voltage, output amp and lapsed time meters. All regulators shall have a 10” X 18” X 8” deep junction box, with thumbscrew closed hinged cover, attachment installed in the field circuit conduit, for the installation of FAA L-823 connector kits specified in AC 150/5345-26E (or latest revision).

i. Runway lighting circuit:

Existing CCRs shall have a second 10” X 18” X 12” deep junction box attached and connected to provide for the installation of FAA RVR monitoring equipment. All Constant Current Regulators at HJAIA are manufactured by MANAIRCO (justification letter dated 02/05/2003) and have 5 intensity step settings. All CCRS shall have taps to allow 30KW CCRs to be taped down to a minimum of 15KW; 15 KW CCRs shall have taps to allow CCRs to be tapped down to a minimum of 7.5 KW. The DSP shall review “As-Built” drawings and perform a field survey prior to performing any new airfield modifications**.**

j. Break-Out Boxes:

Existing airfield lighting vaults currently have field circuits passing through a wall mounted “Break-Out Box” which was properly sized to allow alignment, support, identification, manipulation and splicing of each conductor with an FAA L-823 connector kit specified in AC 150/5345-26E (or latest revision). Existing duct banks consisting of 4” PVC duct, number as specified on drawings are installed from Break-Out Boxes to a manhole located on the outside of the existing airfield lighting Vault building. Duct banks are extended to the field locations as required to connect into airfield circuitry locations or the existing manhole/duct bank system. The DSP shall review “As-Built” drawings and perform a field survey prior to performing any new airfield modifications.

k. Duct bank:

Existing duct banks consisting of 4” PVC duct, number as specified, are installed from the computer room to a manhole located on the outside of the airfield lighting Vault buildings. Duct banks are extended to the field locations as required and connected into existing control and communications manhole / duct bank systems. The DSP shall review “As-Built” drawings and perform a field survey prior to

performing any new airfield modifications. and compliance with AC 150/5370-10H (or latest revision) is required for Duct Bank specification details.

l. Electrical Manhole:

Electrical manholes shall be equipped with spring assist, aircraft rated manhole covers. The cover shall be clearly identified as ELECTRICAL, COMMUNICATION or FAA with proper designation being cast into the cover. See AC 150/5370-10H (or latest revision) for manhole details.

m. Grounding:

All CCRs and other equipment shall be connected to a properly sized building ground loop using ground lugs bolted to pre-drilled and threaded ground brackets which are installed flush with the finished floor. Ground brackets must be installed at each location identified for future equipment installation. ¼" X 2" Ground bus shall be mounted along to the Vault walls to provide for grounding of future equipment. See FAA-STD-019F (or latest revision) for grounding requirements and details.

n. Lightning Arrestors:

All fields lighting circuitry shall have properly sized lightning arrestors connected to the circuit conductors immediately prior to the "Break-Out Boxes". See AC 150/5345-10H (or latest revision) for lightning arrestor details.

o. Emergency Generator:

A minimum of one emergency generator, meeting the requirements of AC 150/5340-17B Section 4.a.1, for a Continuous Power Facility, must be furnished. The generator must be properly sized to energize the entire connected load of the Vault. Additional capacity shall be provided to allow additional future loads to be added as needed. Each generator must be provided with a minimum of a 5000-gallon fuel tank. See AC 150/5340-30J and AC 150/5340-30H (or latest revision) for fuel storage tanks and any FAA generator details

p. Standby Generators:

The design for standby power system shall provide automatic changeover from commercial power to the engine generator within 15 seconds of loss of commercial power. The design must comply with the requirements for a "Configuration A" power system as described in AC 150/5340-30J, section 9.4.1.2.1 "Configuration A" which provides for ATCT activation of the generators(s) during low visibility conditions. Provide for a one second power transfer from generator to utility if the generator

should fail during low visibility operations. The generator shall be sized to power the entire airfield lighting vault with all existing connected loads. Refer to AC 150/5340-30J, section 9.12 for engine generator performance requirements.

q. Airfield Signage:

The signage guidance system provides the ability to easily determine the designation or name of the taxiway in which the aircraft is located, identify routes, indicate mandatory holding positions and identify boundaries. Signs are placed strategically to deter confusion among aircraft and to lessen the probability of accidents. General signage conventions, signage size and signage location requirements shall comply with FAA Circular AC 150/5340-18H D (or latest revision).

r. Monitoring Systems:

CCRs and all other controlled equipment must be equipped with or modified to accept Distributed Control and Monitoring Units (DCMU) that will be totally compatible with the existing Siemens Control and Monitoring System (ALCMS). Each field circuit or sub-circuit shall be equipped with individual circuit megging (IRMS) equipment and DCMU compatible with the existing ALCMS. Refer to FAA Circular AC 150/5340-30J, Chapter 13 and Appendix F (or latest revision). Compliance to AC 150/5345-53D (or latest revision) is also applicable.

s. Security:

The vault must be furnished with security entry control and CCTV monitoring capability. DSP shall coordinate with HJAIA - AIS and Security departments for any design modifications.

t. Miscellaneous Utilities:

The Vault must be furnished with potable water, sewer, and a minimum of 4 telephone lines. The DSP shall coordinate with HJAIA -AIS department for any modification requirements.

5.0 Lighting Systems Design

A. Interior Lighting Systems Design

1. Design Philosophy: Provide adequate, comfortable, and reliable indoor illumination levels appropriate for the tasks to be performed by using the most common unit of measure for quantifying light levels as follows:

a. DOA's design lighting levels measured in footcandles (fc) shall conform to the latest recommended average maintained footcandle levels established by the Illuminating Engineering Society (IES) Lighting Handbook published standards (latest revision) unless otherwise indicated.

2. Minimum to Maximum (brightness) ratio: The lighting minimum to maximum ratio, or uniformity ratio, is the ratio of the maximum illumination level to the minimum illumination level in a space. The uniformity ratio is a measure of how evenly the lighting is distributed throughout a space as perceived by our customers at HJAIA and DOA facilities.
   a. Lighting designs shall be modified accordingly when dark spots (low uniformity ratios which are NOT allowed by DOA) are identified with a photometric analysis.
   b. On occasion the electrical DOA Assistant Director (or designee) may request placement of additional lighting fixtures due to airport knowledge which is not readily accessible to the DSP. DOA recognizes that additional lighting fixtures may contribute to footcandle levels exceeding the IES recommendations, however, compliance is required unless an alternative lighting design solution is proposed to meet DOA concerns. If there are compelling circumstances which prevent meeting the requirements a consultation with the DOA electrical Assistant Director Electrical (or designee) is required. The DSP shall demonstrate that the alternate solution is adequate with a new photometric calculation design.
3. All interior lighting shall be Light Emitting Diode (LED) luminaires to save energy, reduce maintenance cost and to align with LEED certification requirements.
4. Lamp Color: Different color temperatures create different lighting effects and ambiance. Coordination with the DOA Architect shall take place during design to determine the ideal recommended lamp color temperature for the various interior spaces.
5. Small Rooms: If the lighted area contains small rooms enclosed by fixed partitions and/or is occupied by fixed structures or equipment, follow a nonsymmetrical pattern according to the IES Lighting Handbook, using the recommended practice for office lighting.
6. Large Bay Area: If the lighted area is a large bay and a suggested layout is not present in the Electrical Design Criteria, use a modular system so a bay or sectional area can be cut into equal sections without disturbing the fixture pattern.
7. Use natural or day lighting as much as possible, both for energy management and for architectural aesthetics.
8. Provide photo sensitive lighting controls to extinguish selected fixtures or lamps in

response to daylight contributions to space.

9. Utilize task lighting in workstations and consider day lighting from windows and skylights when determining lighting levels for the space.
10. Employ energy management tools such as occupancy sensors, time of day controls or other appropriate means. Energy management should be considered for all spaces. When a Lighting Control Management system is designed with zones, relays and other miscellaneous components provide a detail legend to describe the unique lighting circuit naming methodology and a lighting control wiring diagram for complex systems when required.
11. Lighting fixture maintenance and repair is an important design consideration and can supersede architectural considerations when life cycle cost is considered.
12. Do not locate light fixtures where they cannot be safely reached by ladders.
13. Coordinate fixture locations with other disciplines to ensure that equipment or other work will not occupy space below the fixture mounting planes.
14. Coordinate with other disciplines in the reflected ceiling plans to avoid equipment interference.
15. Air handling type light fixtures listed for installation in plenum (environmental air) space may be utilized in coordination with the mechanical design.
16. Proactively determine the programmatic use of the space, and do not locate fixtures where later installation of programmatic equipment will block fixture access. If this cannot be avoided or fully anticipated during the design phase, provide alternative access such as catwalks.
17. In areas subject to vibration (for example, equipment rooms and rooms near large motors), evaluate the need for a suitable adhesive for all nuts and screwed fittings involved in the fixture mounting. Proper seismic bracing shall be supplied for all fixture types.
18. In general battery packs for emergency egress lighting are not allowed. Where generator power is available, unswitched fixtures shall be utilized for emergency lighting and may also be designated as ‘night lights. Keyed switches are not allowed. The requirements of the NFPA Life Safety Code states “Emergency generators used to provide power to emergency lighting systems shall be installed, tested, and maintained in accordance with NFPA 110, Emergency and Standby Power Systems”. Compliance is required.
19. Where generator power is unavailable, provide a UPS for emergency egress lighting.

20. Provide interior photometric lighting calculations (normal and emergency) as described in the “Design Calculation” section of this Design Standard -Electrical.

B. Exterior Parking Lot Lighting System Designs to include Electric Vehicle Areas

1. In general, all exterior building wall and pole mounted light fixtures shall be switched by photocell with an override switch accessible to qualified maintenance personnel.
2. Emergency Generators, automatic transfer switches and all required components necessary for a complete and operational emergency lighting system shall be provided for parking decks and parking lots. See section “Engine Generator” for details.
3. Parking lot lighting shall be LED luminaires which can efficiently direct light to where it is needed on the parking lot surface when required.
4. Parking lot lighting shall satisfy visibility requirements while providing a sense of safety and security, comfort and aesthetic appeal. Coordination with the DOA Architects is required with the fixture selection.
5. Parking lot light pole locations shall be shown on the site plan drawings with light pole details shown on associated drawings. Details such as round vs. square vs. tapered light pole, pole height, material of pole (DOA preference is Aluminum) and light fixture mounting details shall be specified. Light pole bases shall be shown on design drawings with the DSP structural discipline providing technical pole base requirements and details.
6. Each light pole shown on a site lighting plan shall be assigned a unique pole identification number.
7. Electric vehicle (EV) charging stations: Adequate footcandle levels for Electric vehicle (EV) charging stations shall be provided as recommended by the Illuminating Engineering Society (IES) to ensure safety and visibility. Based on industry data, the recommended lighting levels for outdoor parking areas, which can be applied to EV charging stations, are: 5-10 foot-candles for general parking areas, 10-20 foot-candles for areas with higher activity or where enhanced security is needed. Footcandle levels shall also consider any Americans with Disabilities Act (ADA) requirements.
8. Exterior Lamp Color: Different color temperatures create different lighting effects. Based on published industry data, DOA determined that the ideal recommended color temperature for parking lots, parking deck, and exterior lighting is 4,000 Kelvins (K) which is a natural white color with a low color rendering index (CRI) and good for visibility. Confirmation with the DOA Architect during the exterior lighting system designs is required.

9. Provide the following illumination levels in areas shown below, measured at grade with all fixtures at full brightness, zero sky contribution, 15% variance permissible:

   Design Footcandle Levels (fc):

   a. 10 fc at building entrances, with 5 fc for night emergency egress.
   b. 5 fc at gates and perimeter fences where security assessment is an issue; maintain 3:1 ratio between maxima and minima.
   c. 10 fc in parking lots, maintain 3:1 ratio, with 5 fc for emergency lighting.
   d. 2 fc along illuminated HJAIA roadways. Coordination with other stakeholders may be required for non HJAIA roadways.
   e. The illuminance for Roadway Tunnel lighting shall IAW the IES requirements. However, coordination with other stakeholders may be required for non HJAIA roadway tunnels.
   f. 5 fc at major street intersections.
   g. Dark spots are NOT allowed. Modify lighting designs accordingly to ensure compliance.
   h. Provide exterior photometric lighting calculations (normal and emergency) as described in the “Design Calculations” section of this Design Standard.

C. Parking Deck Lighting System Design
   1. Parking deck lighting shall satisfy visibility requirements while providing a sense of safety and security, comfort and aesthetic appeal. Coordination with the DOA Architects is required with the fixture selection.
   2. Parking deck light levels shall conform to the latest recommended average maintained footcandle levels established by the Illuminating Engineering Society (IES) Lighting Handbook published standards.
      a. Dark spots are NOT allowed. Lighting designs shall be modified accordingly to ensure compliance.
      b. Adequate lighting levels shall be provided for parking deck’s basic areas, ramps (Day/Night), entrance (Day/Night), stairwells, and roofs.
   3. Designs shall consider all factors to ensure the drivers and pedestrians’ safety while providing consideration of columns and other obstacles.
   4. All parking deck lighting shall be LED luminaires to save energy, reduce maintenance costs and to align with LEED certification requirements.

5. Light fixture selections shall consider installation, maintenance, energy consumption, efficacy and lifespan.
6. See section 5.B.7 for Electric vehicle (EV) charging stations and 5.B.8 for exterior lamp color requirements.
7. Do not locate light fixtures where they cannot be safely reached by ladders for maintenance.
8. Provide parking deck photometric lighting calculations (normal and emergency) as described in the “Design Calculation” section of this Design Standard. Also provide photometrics lighting calculations specifically for the Electric vehicle (EV) charging station areas to include considerations to meet any ADA requirements.

D. Airfield Lighting Systems (150/5340-30J or latest revision)

1. Specific Details: The following sections include details specific to the HJAIA, Airfield Lighting Systems designs. AC 150/5340-30J (or latest revision) shall govern all airfield related designs and shall take president over this electrical design standard unless otherwise noted or if any conflicts are identified. Other sections of this Electrical Design Standard are applicable to the airfield designs so the DSP shall perform a review to determine applicability and a field walkdown shall take place to determine all existing systems.
2. Edge Lights: Edge lights are employed to outline usable operational areas of the airport during periods of darkness and low visibility weather conditions. The FAA approves airports for certain types of aircraft traffic. Based on an airport’s approved FAA rating, AC 150/5340-30J (or latest revision) is used to determine whether lights shall have low, medium or high intensity light levels. Hartsfield-Jackson Atlanta International Airport (H-JAIA) uses high intensity elevated L-862T runway edge lights with L-850C semi-flush lights in paved exits and LED L-852T semi-flush taxiway edge lights. See AC 150/5340-30J (or latest revision), Chapter 2 for specific light spacing based on the pavement geometry and to confirm the latest lighting types. This includes required spacing on curved taxiway sections and taxiway radii.
3. Runway and Taxiway Centerline and Touchdown Lighting Systems
    a. General: Runway centerline and touchdown zone lighting systems are designed to facilitate landings, rollouts, and takeoffs. The touchdown zone lights are primarily a landing aid while the centerline lights are used for both landing and takeoff operations. See AC 150/5340-30J, Chapter 3 for specific information regarding

runway centerline, touchdown zone lights and spacing criteria.

b. Runway Centerline lights: The line of lights is offset at a maximum of 2'-6" to either the right or left side of the runway centerline and should be to the opposite side of the centerline marking from the major taxiway turnoffs. Centerline lights must be installed with a 1" maximum deviation from perfect alignment and with a + 0" – 1/16" maximum deviation from finished pavement grade. HJAIA utilizes a 2'-6" spacing from the joint line to the center of the light fixture or light base. See AC 150/5340-30J for Runway Centerline light details.

c. Taxiway Centerline lights are installed on taxiways at H-JAIA. Taxiway centerlines lead off lights for runway exit taxiways emit alternating green and yellow lights to the first light past the runway holding position. In general, lead-off lights on high-speed exits are unidirectional. All taxiway centerline lights shall be equipped with LED lamps. See AC 150/5340-30J, Chapter 3, to obtain specific spacing criteria.

d. touchdown zone lights are used to show where aircraft wheels should touch ground to ensure a safe landing. They emit a white light. The lights consist of 2 rows of transverse light bars located symmetrically about the runway centerline. Each light bar consists of 3 unidirectional lights facing the landing threshold. The rows of light bars extend to 3,000 ft. or half the runway length for runways less than 6,000 ft. from the threshold, with the first light bars located 100 ft. from the threshold. See AC 150/5340-30J Chapter 3 for more specific information regarding runway touchdown zone lights.

4. Miscellaneous Lighting Visual Aids

a. Beacons serve as indicators to locate lighted airports. The type of beacon used is dependent upon its function. They can be used at airports that have a high or medium intensity lighting system or when it is necessary to warn airmen of an obstruct ion which presents a hazard to air commerce during periods of darkness or limited visibility. See AC 150/5340-30J, Chapter 6 for guidelines to determine which beacon would best serve HJAIA and the mounting method for the beacons.

5. Airfield Lighting Control System:

The existing airfield lighting control system at H-JAIA is/was a Siemens Airfield Solutions system, however, confirmation is required to determine if system is currently installed. All future controlled equipment, either in the lighting vault or individual fixture control and monitoring devices must be designed with equipment that is compatible with this system, or the current system installed. The system uses a Distributed Control and Monitor Unit

connected to each piece of controlled equipment and an integrated circuit megging unit for each circuit. All individual fixture control and monitoring equipment must be designed using power line carrier equipment that is compatible with the Siemens ALCMS. See AC 150/5340-30J, Chapter 13, Appendix F and other sections for details.

6.0 Power Receptacle System Design

A. Definition

The term outlet refers to the actual box where receptacles are present, receptacles are opening in the box which you plug your device into.

B. Location / Minimum Requirements

Locate receptacle symbols on power plan layout drawings. The minimum requirements for the receptacle system design shall include the following:

1. In general, flush mount receptacles shall be installed in all areas.
2. Surface mounted receptacles are allowed in spaces such as warehouses, equipment chases and electrical/mechanical rooms.
3. Provide dedicated receptacles for janitorial equipment in hallways and aisles maximum 50 feet apart; mount at 36 inches above the finished floor, and segregate from other receptacles.
4. Mounting heights for general duplex receptacles shall be mounted at 48” AFF unless noted otherwise.
5. Provide general-purpose receptacles in electrical and mechanical rooms; receptacles shall be Ground Fault Circuit Interrupter (GFCI) type. See reference 2.A.1.g, section 210.63 (B) for additional receptacle location requirements.
6. Only where specified on design drawings provide duplex receptacle, 20 AMP, 120V with USB-A and USB-C charging ports.
7. Avoid back-to-back receptacle installations.
8. Branch circuit design for general use power outlets shall be limited to no more than six receptacles per circuit.
9. Provide general-purpose receptacles adjacent to each exterior door; receptacles shall be weatherproof and GFCI type.
10. Provide rooftop maintenance outlets per NEC, outlets shall be weatherproof and GFCI protected.

11. Do not wire GFCI's and non GFCI's in the same circuit.

C. Electric Vehicle Supply Equipment (EVSE) Charging Stations

1. A charging station, also known as a charge point, or EVSE, is a power supply device that supplies electrical power for recharging plug-in electric vehicles. When specified, typical units require a dedicated 40-Amp circuit to comply with the NEC requirements in Article NEC 625. A design-based vendor is required to determine the actual electrical requirements.
2. EVSE charging stations shall be installed at Parking Decks, Parking lots, and at various DOA facilities located throughout HJAIA when specified under the DOA project scope document.
3. Level 2 chargers shall be specified when required.
4. If multiple electric vehicle supply equipment (EVSE) units are connected to the same circuit, an EV charging load management systems shall be specified which allows the control of how much electricity each charging station can use.
5. The DSP shall review the City of Atlanta, ordinance 25-O-1011 for the comprehensive Electric Vehicle Charging Readiness Policy requirements to determine applicability.

7.0 Low Voltage Power Systems Design (<600 volts)

A. General Power Requirements: Applicable to low voltage power system electrical components (systems less than 600 volts).

1. Single Line Diagram Drawing details
   a. Single line drawings shall be provided for all HJAIA CPTC, DOA facilities, Capital, Concessions and Tenant projects. A riser diagram can be submitted to illustrate designs; however, riser diagrams shall not be substituted for single lines diagrams. Riser diagrams AND single line diagrams shall be provided for multiple story buildings.
   b. Electrical data such as voltage, amperage, phase, cable, conduits and breaker sizes, AIC ratings, metering (see section "Electric Power Monitoring System" (EPMS)), interconnection to utilities, downstream devices and ALL other pertinent electrical details to make a complete electrical distribution system shall be illustrated on the single line diagrams.

c. Single line diagrams shall be provided for each switchgear, switchboard, distribution panelboard and motor control center with partial single line diagrams provided for each switchboard showing downstream panelboards

d. Single Line diagram drawing(s) representing the entire electrical distribution system infrastructure or sections of the affected electrical system shall be developed for each project scope of a HJAIA CPTC, DOA Capital, Concessions and Tenant project. Details can be added to existing As-Built single-line diagram drawings as required.

e. Symbols used on single line diagram drawings shall be consistent with DOA CADD and ANSI standards.

f. Single line drawing detail illustrations shall start at the top of drawing with the highest voltage levels at the utility transformer and generator with the incoming source of the power at the building transformers(s). Then show all pertinent electrical equipment downstream to the panel board level including cables. Details such as switchboard/switchgear, transformers, panel boards, motor control centers, generators, automatic transfer switches, uninterruptible power supplies, inverter systems, motors, starters, main disconnect switches, etc. shall be included to show a complete system.

g. Transformers: note the kVA size, primary and secondary voltages, available fault current (at the transformer terminals) and phasing (building service entrance only).

h. Switchgears, Switchboards, and Distribution Panelboard equipment shall be shown in the “expanded” form. Drawings shall detail main breaker, tie breaker, feeder breakers, spare breakers, CT’s, PTs, and meter(s). Annotate switchboard rated amperage, voltage, short circuit capability to include frame and trip sizes of all breakers in the gear and distribution panelboard.

i. Starters: show starter/breaker/fuse and NEMA ratings for all starters.

j. Generators and Transfer switches when required: details shall include generators, automatic transfer switches and their respective single line diagrams. Note the service entrance, feeder wire and conduit sizes.

k. Provide short circuit information for Kilo Ampere Interrupting Capacity (KAIC) on single lines for all buses.

l. Circuit Breakers or fuses rated 1200 Amps or more must have a documented means of Arc Energy Reduction in accordance with NEC Section 240.67 and 240.87.

2. Electric Power Monitoring System (EPMS)

   a. The DOA utilizes an Electrical Power Monitoring System (EPMS) consisting of power digital smart meters, data connections, converters, gateways, hubs, cables, software and programing, interactive graphic displays, circuit breakers, receptacles and other accessories as required by the manufacturer to make a complete/operational system.

   b. The DSP shall include an EPMS scope of work to include EPMS single line diagram or riser diagram drawing (s) with notes, interactive graphic screen updates (with new or revised floor plans showing EPMS meter locations and graphic screen single line diagrams), software and programing details for the EPMS metering equipment to integrate and communicate with the existing EPMS system. The installation of software along with programming of the EPMS monitoring equipment and interactive graphic screens (new or updates) shall be provided by the AATC's preferred contractor and in conjunction with the EPMS contract service provider. The EPMS component naming methodology shall be consistent throughout the HJAIA CPTC and match construction documents.

   c. When metering for switchgear, switchboards, motor control centers, distribution panelboards and panelboards is specified, provide instruction indicating that meter(s) shall be integral to the equipment, supplied and installed by the original equipment manufacturer at the factory.

   d. Digital smart meters shall be provided to monitor the mains of switchgear, switchboards, motor control centers, distribution panelboards and panelboards. The digital smart meters shall be capable of aggregation to provide building-level usage representing total building energy consumption.

   e. Load Separation: The DSP shall include the separation of electrical circuits for electrical monitoring in their power system design. The system(s) shall be designed so that measurement devices can monitor the electrical energy usage of the following load types: lighting (interior and exterior), HVAC, boarding bridges, and receptacle loads. All load types shall be separately metered as required by ASHRAE 90.1-2013/2016 and LEED requirements.

   f. Separate metering: For new construction, lighting, HVAC (heating, cooling), boarding bridges, elevators, and escalators shall be metered separately which may require additional panelboards. The DOA electrical Assistant Director shall be notified as early as practical if additional panelboards are required.

   g. Concessions/*Tenants*: Concessions must draw power through a digital smart energy

meter. Each distribution section of new concession switchboards shall be equipped with (10) sub-meters for individual concessions feeder breaker monitoring. Sub-meters shall be factory pre-wired to main meter. Coordinate with AATC for concession revenue meter requirements (EPMS metering not required for internal concession spaces). *Tenant* space power consumption is covered under separate lease agreements with AATC.

h. Cyber Security: The vendor of the EPMS software shall have a cybersecurity evaluation program which is certified under UL 2900. Verification shall be provided by the DSP under the shop drawing review process.

i. Specifications - for small projects EPMS specification requirements can be included on the EPMS drawings.

j. Specifications - for large projects a Division 260913, Specification section titled "Electrical Power Monitoring System (EPMS)" shall be included as a standalone electrical specification section deliverable.

k. Digital Smart Meter Levels - Provide embedded main digital smart metering with display on new switchgear, switchboards, motor control centers and panelboards as follows: (Feeder metering is not required)

   i. Highest Level: Switchgear main metering shall be the highest-level product of the manufacturer.

   ii. Midrange Level: Switchboards meters shall be of the next highest-level product type of the manufacturer.

   iii. Lowest Level: Panelboard meter shall be of the basic lowest level product type required for wattage, voltage and current.

l. Data Storage: meters shall be able to store data for a minimum of 1 year and shall be capable of sending data to a server for use in a power monitoring software application.

3. Low Voltage Switchgear (SG)/Switchboards (SB)

   a. All new SGs and SBs shall be purchased with new Digital Smart Meters as described in section titled "Electric Power Monitoring System (EPMS)".

   b. All new and existing SGs and SBs shall be located on power plan drawings.

   c. Detail feeder and branch circuit wiring sizes shall be shown on single -line diagram.

   d. For all SG and SB provide load information, voltage, phase, Kilo Ampere

Interrupting Capacity (KAIC) ratings, mains ratings, load summary, demand load summary, circuit breaker sizes, spare sizes and space information in panel schedules.

e. Provide elevation front view drawings for each SG and SB showing all circuit breaker locations in each section with compartment / cubicle assigned with a unique identification number.

f. Provide any additional details on constructions drawings as necessary to make a complete and operational system.

g. Locate SGs and SBs indoors where possible, avoid outdoor locations.

h. Locate SGs and SBs in dedicated electrical rooms accessible only to qualified personnel.

i. For service entrance equipment, provide rear access when possible.

j. SG's/SB's shall be equipped with:

   i. Copper main bus; 100 percent capacity full length.

   ii. Copper neutral bus, if required; 100 percent capacity full length.

   iii. Copper ground bus; full length.

k. Main and feeder circuit breakers shall be arranged for compression connectors.

l. All circuit breakers for SGs/SBs shall be constructed according to NEMA standards and shall have provisions for lockout/tag out.

m. All circuit breakers shall include electronic interchangeable trip with adjustable LTPU, LTD, STPU, STD and INST functions. When required, provide integral GFPU and GFD functions.

n. The design for SGs/SBs shall include:

   i. a minimum of 20 percent spare capacity with the connected load not exceeding 80% of main circuit breaker rating.

   ii. at a minimum 1-spare circuit breaker of each frame size (excluding main) used.

   iii. future bus extensions and dedicated space for at least one future section.

o. Provide integral TVSS to meet requirements of NFPA 780, when required.

p. Where draw out circuit breakers are specified, provide manufacturer's overhead lifting device suitable for all circuit breaker sizes and locations.

q. Provide manufacturer's test kit for all circuit breaker types and functions used.

r. All circuit breakers larger than 200 amps shall be tested.

s. Main circuit breakers are to be sized according to the appropriate NEC section for any location. If a larger breaker is installed, then the appropriate trip plug must be installed. It is not permitted for the trip settings to be dialed down to meet the intent of this article.

t. Provide main lugs only when the switchboard is in the same room with their feeder breaker, otherwise, provide main circuit breaker.

u. Switchboards shall be provided with a main circuit breaker.

v. Switchboard and Distribution Panelboard (DP) requirements for Concession and *Tenant* spaces are as follows:

i. The power feed for the Concession spaces must originate at a switchboard dedicated to concessions. If there is no space or spare available in the Concession switchboards DOA shall be consulted so that a suitable alternative switchboard can be designated by the DOA.

ii. For large Concession spaces where the main disconnect size is 400 amps or above ground fault protection may be required at the discretion of the DOA.

iii. Verification of the actual load on the existing switchboard is the responsibility of Concession's DSP. Current load readings of the switchboard are required so that new loads can be added to the switchboard safely. See section titled "Circuit Load and Metering" and "Load Calculations".

iv. Power for the *Tenant* spaces shall originate at a CPTC house SB or DP with spare capacity to add load and not be dedicated to Concession spaces.

4. Motor Control Centers (MC)

a. MCs shall be purchased with new Digital Smart Meters as described in section titled "Electric Metering and Power Monitoring System (EPMS)"

b. MCs which consist of multiple enclosed sections with motor starters, fuses or circuit breakers and power disconnects shall be shown on the power plan layout drawings.

c. MC details shown on one-line diagram shall include all loads, circuit numbering and spaces. KAIC ratings of all components shall be shown to match the electrical system.

d. Provide elevation (front views) showing all starter locations and circuit (compartment) number in a logical industry sequence.

e. Provide additional details such as schedules or other information on drawings as necessary for construction.

f. Locate indoors where possible; avoid outdoor locations.

g. Locate MCs in dedicated electrical rooms accessible only to qualified personnel.

h. Use front accessible where possible.

i. Use copper main bus; 100 percent full length capacity, minimum 600A.

j. Use copper neutral bus, if required; 100 percent capacity full length.

k. Use copper ground bus, full length.

l. Wire MCs for NEMA Class I, Type B.

m. Circuit protectors, contactors, overload blocks and all accessories shall be NEMA construction.

n. Motor starters shall include overload reset button, red and green, LED type pilot lights-red for “run” mode and green for “stop”.

o. Provide (HAND-OFF-AUTO (HOA) in cover; minimum 2-normally open (N/O) and 2-normally closed (N/C) auxiliary contacts and individual control power transformer (CPT) if above 150V to ground. Provide fuses for transformers over current protection.

p. CPT, if required, shall be sized for 100 VA spare capacity and include 2 primary and 1-secondary fuses for 120V control.

q. Do not mount panelboards or associated transformers in MCs. In addition, transformers must not be installed above the ceilings.

r. Do not mount variable frequency drives (VFD) in MCs; VFD’s shall be individually mounted at controlled motor.

s. Provide future bus extensions and dedicated space for at least one future vertical section.

t. Provide minimum 20 percent spare capacity.

u. Provide 10 percent spare cubicles for each size provided.

5. Panelboards

a. All new Panelboards shall be purchased with new Digital Smart Meters as described in section titled “Electric Power Monitoring System (EPMS)”.

b. Locate new and existing panelboards identified for a project on power layout and or

enlarged layout floor plan drawings.

c. Provide completed panelboard schedules on drawings. Schedules shall show voltages to match voltages on single line diagram. Each circuit on the panel schedule shall be described to reflect the function and location of each load (for example, lighting room xx apron level). Each circuit shall show a connected and demand or estimated load in KVA whether the circuit is new or existing.

d. Locate indoors where possible, avoid rooftop locations.

e. Locate in dedicated electrical rooms and where possible avoid user or passengers' spaces. Column type panelboard is not allowed unless approved by DOA electrical Assistant Director or designee.

f. Flush-mounted in areas such as user hallways and office spaces. When flush-mounted, provide spare conduits, skirting or other provisions to facilitate future modifications.

g. Surface-mount in all other areas including user storage, warehouses, equipment chases and electrical or mechanical rooms.

h. Avoid sub feed or dual-feed lugs. Connecting more than one wire on or under a single lug or connection point in the industry is referred to as double lugging. This is only allowed if that terminal, lug or connection is specifically rated for more than one wire per NEC 110.14.

i. All buses for panelboards shall be copper.

j. Avoid individually mounted sub feed circuit breakers.

k. Main circuit breakers are to be sized according to the appropriate NEC section for any location. If a larger breaker is installed, then the appropriate trip plug must be installed as well. It is not permitted for the trip settings to be dialed down to meet the intent of this Section.

l. Provide Transient Voltage Surge Suppression (TVSS) for all panel boards serving electronic loads.

m. Provide 200% panelboard feeder neutrals and 200% neutral bus when required per harmonic analysis and for all electronic loads to include IT equipment. The 200% panelboard feeder neutrals shall be located on the appropriate feeder schedule.

n. Provide main lugs only when the panelboard is located in the same room with their feeder breaker otherwise, provide main circuit breaker.

o. Connected loads shall not exceed 80% of main circuit breaker rating.

p. Series rated circuit breakers are not acceptable.

q. Panelboards shall be provided with a main circuit breaker designated with the required KAIC ratings to match the electrical system.

6. Low Voltage Dry Type Transformers (TR)

a. Low voltage dry type TRs shall be shown on the power plan layout drawings.

b. Project design specifications shall include requirements for the transformers to factory assembled, metal enclosed and provided complete with mounting brackets (as required) to make a complete operational system.

c. Provide elevation and/or mounting details as required for construction.

d. Energy efficient type: Shall meet NEMA TP-1.

e. Taps: Voltages shall be compatible with the application. Taps shall be provided two at plus 2-1/2 percent increments and two minus 2-1/2 percent increments from rated voltage

f. Windings: TRs shall be provided with copper windings; aluminum is not acceptable.

g. Rating: The sizing of step down or step up dry type TRs shall take into consideration the current or expected normal and harmonic loading. The decision to use “K” transformers will be based on harmonic analyses of the connected and forecast load and be in compliance with IEEE- 110 and defined by UL as K-factor.

h. Mounting: TRs shall be mounted where accessible. No units may be mounted behind partitions, above ceilings, etc. If transformer is floor mounted see section 4, titled “Floor Mounted Equipment” for details. See section C.7.c for additional transformant mounting details.

i. Dry type TRs shall be U.L. listed and certified to meet NEMA Standards.

j. Grounding and bonding for TRs shall be per NEC requirements.

7. Motors

a. Motors shall be shown on the power plan layout drawings.

b. Motors that are controlled by across the line motor starters (contactor, motor circuit protector and overload relay) and are 25 HP or larger shall include power factor correction capacitors at the motor starter to achieve 95 percent power factor.

c. VFD controlled motors are excluded from the power factor correction requirement. Utilize VFD’s with minimal harmonic distortion.

d. To ensure a minimum standard of quality, identify devices, fittings, fixtures, and equipment on equipment list drawings with their electrical sizes, ratings, manufacture and catalog number. This is not necessary for items such as panel boards where complete specifications are written.

e. Identify motor starters with sizes on the motor control schedule.

f. Identify all equipment by using standard symbols and equipment schedules. In addition to the items already mentioned, the schedule should include information to help the contractor obtain the equipment and materials intended by the design.

g. Specify nameplates on all control items used on the job. Specify each nameplate either on the motor schedule or on the equipment list. Each nameplate identifies the system and the function of that device to the system.

h. Motors shall comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements.

i. Code Letter Designation: Motors 15 HP and larger: NEMA starting Code F or Code G, Motors Smaller than 15 HP: Manufacturer's standard starting characteristic. See project specifications for specific common motor requirements.

j. When required, provide motor thermal overload (TOL) relays IAW NEC requirements which serves as a crucial protective device in electrical systems used primarily to safeguard motors from overheating.

8. Variable Frequency Drives (VFD)

a. VFD’s shall be shown on the power plan layout drawings, indoors where possible; avoid outdoor locations. Locations shall match the mechanical drawings therefore coordination is required.

b. Typically, VFD’s will only be installed when requested by the Mechanical Engineer. Coordination with the mechanical project specifications is required for requirements.

c. Contrary to previous requirements, a manual bypass circuit is not typically required on a VFD. A bypass circuit should only be specified after discussing the requirements with the Mechanical Engineer.

d. Do not install VFD’s closer than five feet to an FID cabinet.

e. VFD’s should be located as near as practical to the motor it controls.

f. The VFD should never be located more than 50 feet from the controlled motor.

g. A disconnect switch with an auxiliary contactor shall be provided near the motor.

9. Busway Systems

a. Type: The DOA preferred Busway shall be the **"*Integral*"** ground busway system where all or part of the housing are designed-built-in (not an add on) for grounding.

b. Busway shall be copper with 100% neutral bus minimum. Other electrical characteristics such as voltage and phase, shall be specified on single line drawings.

c. The Busway shall be totally enclosed in a non-ventilated aluminum housing and single-bolt joints.

d. Use IP54 or greater for indoor installations and NEMA 3R for outdoor installations. Busway shall also comply with UL 857.

e. The Busway shall be protected against overcurrent in accordance with the allowable current rating of the busway.

f. Where busway is used as a feeder, the voltage drop should not exceed 3 percent.

g. All busways shall be grounded as described in section titled "Building Grounding System Designs"

h. Provide expansion fittings for all busways at building expansion joints.

i. The entire busway run shall be shown on power plan layout drawings. Busway shall also be shown and designated on the single line diagrams

j. Where busway penetrates walls and floors, seal all penetrations with the appropriate fire stopping material to maintain fire rating of walls and floors.

k. Existing legacy Busway at the CPTC is "Siemens". If existing sections of busway are to be replaced, the replacement should be "Siemens", like-for-like. If a different manufacturer is selected due to busway being obsolete a busway "TAP" box may be required which is not the preferred method for DOA,

B. Lightning Protection System Designs

1. The Lightning protection systems shall conform to UL 96A and NFPA 780 requirements.
2. A Master Label Lightning Protection system (UL certified) is required for all new roof and/or modified roof renovations/extensions associated with DOA facilities located at HJAIA. In addition, all new and existing Lightning Protection Systems shall have a Master Label UL Certification and or a UL "Letter of Findings". The scope of work associated with the "Letter of Findings" requires DOA electrical approval.

3. The DSP shall place notes on contract drawings and specifications stating that a new Master Label UL Certification is required for any new roof structures.
4. A Master Label UL re-Certification or a “Letter of Findings” is required when any new lighting protection components are tied to an existing lightning protection system or when the existing lightning protection system is modified.
5. A UL Master Label and or a “Letter of Findings” is also required for structures with expired Master Label UL Certification or with structures having an undetermined certification.
6. The DSP shall submit a Master Label UL Certification or a UL “Letter of Findings” as a project deliverable.
7. The DSP shall show a lightning protection system with details on Lightning Protection and Counterpoise Composite Plan drawings. Details such as loop conductor, air terminals, down conductors, bonding, penetration sleeves and all other components required to make a complete and operational Lightning Protection System shall be identified.
8. The Lightning protection drawings shall be sealed and signed by a P.E. (Electrical) registered in Georgia and submitted to the DOA for review.
9. The lightning protection system shall be connected to the building counterpoise system.
10. The DSP shall develop a performance specification for a certified Lightning Protection system which complements the submitted lightning protection drawings.

C. Building Grounding System Designs

1. The Grounding system shall conform to IEEE 142-2007 “Grounding of Industrial and Commercial Power Systems”, National Fire Protection Association (NFPA) and NEC Article 250 for all grounding requirements. IEEE 142, section 4.1.3 states “Resistances in the 1 ohm to 5-ohm range are required”. DOA requires that the resistance to ground for individual equipment and systems shall not exceed 5 ohms. See AIS Infrastructure Standards (latest edition) for specific and independent telecommunication grounding and bonding system requirements).
2. The Grounding system shall be designed and illustrated on a stand-alone grounding layout plan drawing.
3. Associated grounding details shall be placed on electrical drawings.
4. A grounding one-line or /riser diagram shall be developed for each project.
5. Grounding drawing shall show interconnection of the following:
    a. All metal systems of the building such as:

i. Interior and exterior water system.

ii. Metal ductwork.

iii. Building steel and HVAC roof top units (if applicable).

iv. Lightning protection system.

v. Made electrodes, etc.

vi. Building foundation rebar.

vii. Metal roof drains.

viii. Antennas and Apron light poles.

b. All busways shall be grounded in accordance with the NEC. See section titled "Busway Systems" for additional details.

c. Drawings shall indicate where bonding is required in the electrical system (that is, neutral or ground bushing on transformers).

d. Drawings shall indicate where any new electrode system (s) connects into the rest of the grounding system when applicable.

e. Drawings shall identify any special requirements for the building grounding system specifically for static or signal grounds.

f. The size of all required grounding conductors (grounding electrode conductor, equipment grounding conductors, main bounding jumpers, etc.).

6. The design shall consider the NEC as a minimum requirement and other factors need to be considered when designing the system, signal grounds, and lengths of grounding conductors to ground.

7. All ground connections to ground rods, buses, panels, etc., shall be made with pressure type solderless lugs and ground clamps.

8. Soldered or bolt and washer type connections are not acceptable, exothermic welds are the DOA's preferred method of connection to a ground rod.

9. The grounding design must also be based on a soil's resistivity test and ground resistivity calculations. Below grade connections should be exothermically welded.

10. A wall mounted copper ground bar shall be provided in each electrical room housing medium voltage switchgear or substations. It should be interconnected with the ground electrode and ground bus in the switchgear or switchboard

11. Tests: After installing grounding system but before permanent electrical circuits have

been energized, test for compliance with requirements. Measure ground resistance no fewer than two full days after the last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests by fall-of-potential method according to IEEE 81.

12. If resistance to ground exceeds acceptance criteria of IEEE, the Grounding system will be considered defective and corrective actions shall be performed to reduce the ground resistance and bringing into compliance. The electrical DOA Assistant Director (or designee) shall be notified of any deficiencies; however, the grounding system will not be accepted until the 5 ohms acceptance criteria is met.

8.0 Design Calculations

A. Calculation requirements

1. All electrical calculations to include any recommendations shall be sealed and signed by a P.E. (Electrical) registered in Georgia. The original stamped signed copy of the calculations shall be provided to DOA as part of the design submittal.
2. Present all electrical calculations using the guidelines provided in this section. Provide two 8-1/2- by 11-inch, 3-hole-bound reports that contain all electrical calculations, time coordination curves, and protective device settings.
3. Provide one-line diagrams (hard copy) and electronic files with all calculations. At the end of the project, update both reports and electronic files in the same manner as other As-Built drawings.
4. The DSP shall submit calculations to DOA using PMWeb which is a web-based Project Management software tool IAW, P&D Policies and Procedure 02-001 “Document Control”.
5. The SKM System Analysis software tool (latest version) identified in this section, shall be used for all mid-to-large CPTC projects. For smaller non-CPTC projects, the DSP shall notify the DOA Assistant Director (or designee) of the analysis software tool being used and obtain approval.

B. Short Circuit, Circuit Breaker Coordination Study

1. The DSP shall prepare a complete set of short-circuit, circuit breaker coordination study calculations. The DSP may elect to sub-contract this work but must inform DOA in writing. The DSP shall submit the sub-consultant’s experience and

qualifications to the DOA electrical Assistant Director (or designee) for approval and shall be responsible for any sub-contracted work to include technical and quality assurance reviews.

2. When both normal and standby primary feeders serve a facility, provide calculations for both. The calculation shall be performed utilizing the latest SKM System Analysis software tool.
3. Calculations shall consider both three-phase and single-phase to ground fault current on secondary systems. State the base MVA/kVA on the calculations.
4. Prepare protective device coordination graphs which demonstrate coordination of devices for interrupting faults. Prepare these graphs for all new or modified primary and secondary systems. Coordination curves shall be prepared along with the single line diagram indicating which devices are under review.
5. Provide a flag on all coordination curves indicating the available short circuit current at each device. Curve plots from the software shall be used.
6. The Electrical System shall be fully coordinated unless directed otherwise by the DOA Engineering Director. Coordination study shall be from the utility transformer to the main circuit breaker in the smallest panel.
7. Indicate in the coordination sheet, short circuits (with flags), breaker type, settings and scales.
8. Calculations shall include ATS in closed-transition mode unless directed otherwise by DOA Engineering. See Engine Generator/Transfer Switch Sizing Calculations for additional guidance.
9. Present the manufacturer’s catalog data for each protective device to show they have adequate fault current interrupting capacity for the available short circuit current
10. The Short Circuit, Circuit Breaker Coordination calculation report shall include the following:
    a. Summary
    b. Assumptions (verified or unverified),
    c. Available short-circuit current letter from utility company,
    d. Tabulation of results of all scenarios,
    e. Print out of all inputs from SKM System Analysis software,
    f. Print out of all results from SKM System Analysis software,

g. Single Line Diagram from SKM System Analysis software, and

h. Single Line Diagram with available short-circuit current value on each bus.

11. One final hardcopy report shall be provided to the DOA in a 3” binder(s) and in an electronic SKM System Analysis file format. The DSP shall submit files to DOA using PMWeb IAW, P&D Policies and Procedure 02-001 “Document Control”.

12. See AC 150/5340-30J, section 13. “Short Circuit Analysis for airport airside projects.

C. Load Calculations

1. The DSP shall prepare and submit electrical normal load calculations early in the engineering process (schematic - design phases) to provide reasonable assurance that existing electrical equipment such as switchgear, switchboards (including main-tie-main configurations), panelboards and other equipment are adequately sized (with margin) to accommodate new load additions or if equipment concerns are preventing a code compliant design. The DSP shall analyze the Emergency Generator loads in parallel with the normal power loads.

2. The DSP shall follow steps outlined in section titled “Circuit Load calculation or Metering” for obtaining output load data used as input in the design basis load calculation(s).

3. The load calculation(s) shall provide an estimation of all newly added electrical loads along with existing for the system under review.

4. The units of electrical loads shall be kilovolt-amperes (kVA). The units of kilowatts (kW) shall be converted to kVA using a power factor (PF).

5. If an existing Panelboard illustrated on a contract drawing is used as the design basis for a load calculation the following is required:

a. The load calculation shall indicate load classifications (type such as lighting, heating, motor, HVAC, receptacles, miscellaneous equip, etc..), connected loads, demand factors and estimated demands.

b. The Panelboard “Totals” shall be identified for connected loads, estimated demands, existing connected current loads (A), estimated demand loads (A).

c. All verified or unverified assumptions shall be identified.

6. The electrical load calculation results shall demonstrate that the existing equipment is sufficient to meet new added load demands (Pass) or is inadequate (Fail) with recommended corrective actions. A discussion with the DOA Assistant director (or designee) is required if code compliant issues are identified and resolutions are necessary to continue.

D. Emergency Generator/Transfer Switch Sizing Calculations

1. For HJAIA CPTC: The HJAIA Resiliency Emergency Power program provided and installed emergency power generators for each individual concourse and main terminal at the CPTC which were sized to accommodate their individual concourse loads upon loss of normal power (resilient 100% back-up emergency power). When loads are added to the normal power source, the DSP shall analyze the associated generator load block (emergency generators) capacity and determine if the existing emergency generators are adequately sized to provide a resilient emergency power source. Load shedding to remain resilient is prohibited. Coordination with the DOA electrical Design Manager may be required to obtain the latest Peak demand load data from the utility.
2. When loads are added/removed the emergency generator's capacity/margin shall be revised and documented in the analysis.
3. For all HJAIA CPTC and DOA facilities, the emergency generator sizing calculations shall show the "sequence of operation" for the various loads that are served from the generator. Consideration that the voltage dip shall not exceed 35% for general loads and motors and 20% for critical and electronic loads.
4. For HJAIA DOA facilities with generators, as new loads are added to an existing generator the analysis shall illustrate the generator's ability to handle new and existing loads along with identifying the reserve capacity remaining for the generator size.
5. All loads used for this analysis shall be from a verifiable source with all verified or unverified assumptions identified and documented.
6. Automatic Transfer Switch (ATS) sizes fed from the generator shall match the generator size.

7. ATS's shall be closed transition as required by Georgia Power or unless otherwise directed by the DOA electrical engineering department. Noted exceptions: ATS's shall be open - transition for parking decks, parking lots, guard booths and escalator designs if required.

E. Arc Flash Calculations

1. Arc Flash calculations shall be in accordance with NFPA 70E and IEEE STD-1584. Provide complete electronic calculation in its original format (i.e. SKM System Analysis files).
2. For arc flash, provide calculations for each piece of electrical equipment and provide 3 samples of the arc flash warning signs to DOA for approval.
3. Based on the calculation output, Arc-flash warning signs shall be placed on electrical equipment in locations where arc-flash hazards exist IAW requirements of OSHA and NFPA 70E.
4. One final Arc Flash hardcopy report shall be provided to the DOA in a 3" binder(s) and in an electronic SKM System Analysis file format via. the PMWeb system, IAW P&D Policies and Procedure 02-001 "Document Control" (latest revision). For smaller non-CPTC projects, the DSP shall notify the DOA Assistant Director (or designee) of the software being used.
5. See AC 150-5370-10H for airport airside project arc flash requirements.

F. Harmonic Calculations

1. Electronic loads are generally nonlinear, and results in the generation of harmonic currents. These currents circulate within the AC distribution system, which supplies power to electronic loads. For each HJAIA - DOA facility, prepare a harmonic study calculations when significant harmonic (nonlinear) load is added to the distribution or building power system.
2. A harmonic study will also be required when the new load exceeds the recommended voltage or current distortion levels as allowed per by IEEE 519-2022, "Recommended Practices and Requirements for Harmonic Control in Electric Power Systems."
3. The results of the harmonic study will dictate when additional harmonic correction measures are required. Provide base line harmonic measures prior to adding new equipment that may introduce harmonics. Ensure that harmonics introduced due to the new equipment will not exceed the base line values.
4. One final Harmonic Analysis Calculation hardcopy report shall be provided to the

DOA in a 3” binder(s) and in an electronic SKM System Analysis file format via. the PMWeb web-based Project Management software system, IAW P&D Policies and Procedure 02-001 “Document Control” (latest revision).

G. Voltage Drop Calculations

1. To mitigate voltage drop concerns during design, the electrical DSP shall take into account factors like cable length, gauge (size) of the conductors and the current load.
2. A maximum combined voltage drop of 5 % with feeders at 2% and branch circuits at 3% shall not be exceeded.
3. Sensitive circuits: Branch circuits supplying sensitive circuits shall be limited to a voltage drop, not exceeding **1.5** % and the combined voltage drop of feeder and branch-circuit conductors shall not exceed **2.5** % per NEC 647-4(D). For Cord-Connected equipment the voltage drop on branch circuits supplying receptacles shall not exceed 1% per NEC 647-4(D)(2).
4. Prepare voltage drop calculations IAW the National Electrical Code (when required) and place details on drawing(s) or in a stand-alone document and submit as a deliverable via. the PMWeb web-based Project Management software system, IAW P&D Policies and Procedure 02-001 “Document Control” (latest revision).
5. See AC 150-5340-30J, section 13.2.6.1.1 for airport airside control voltage drop requirements.

H. Lighting Calculations

1. Photometric calculations shall be in the point-to-point format. A Photometric calculation summary shall also be provided to describe the output details such as light loss factor used (LLF), the Average fc, Maximum (Max.) fc, Minimum (Min.) fc, Average/Min. fc, Max./Min. fc (maintain ratio between maxima and minimum).
2. Photometric calculation drawings shall be provided for building (interiors and exterior), parking lots, parking decks and other locations where applicable to illustrate the designed fc levels.
3. Provide individual photometric calculations for normal and emergency lighting.
4. Provide final As Built lighting calculations and photometrics drawings at the completion of each project via. the PMWeb web-based Project Management software system, IAW P&D Policies and Procedure 02-001 “Document Control” (latest revision).

9.0 Equipment Identification

A. Branch Circuit Panelboard Directories

1. Computer generated panelboard directories shall be created under the As-Built phase and placed under plastic jacket or protective cover for protection from damage or dirt. Handwritten directories are not allowed.
    a. As a minimum provide the following details on directories:
        i. Number each single pole space.
        ii. Odd-numbered circuits on the left side starting at the top, even on right side starting from the top.
        iii. Securely mount directories on inside face of panelboard door.
        iv. Define briefly, but accurately, nature of connected load (i.e. lighting office number, receptacles, electrical room, etc..).
        v. Provide CPTC official GIS room number locations for all loads and indicate panel name on schedule.
        vi. Multi-pole circuits shall utilize all pole space numbers as its circuit identifier, i.e., a three-pole circuit will have three space numbers.

B. Identification Nameplate Labels

1. Equipment identification nameplate labels which are different from electrical manufacturers nameplates shall be provided for all electrical equipment located at HJAIA. For CPTC and DOA ancillary facilities, the unique electrical equipment nameplates shall be created using the methodology outlined in this standard and applied to all electrical equipment with the noted exception: Concession spaces shall have unique identification nameplates for all electrical equipment designed by the DSP using a systematic approach. The following is a minimum equipment list:
    i. Normal and Emergency (Life Safety, Critical, Legally Required Standby, Optional Standby, and Uninterruptible Power Supply)
    ii. Power electrical equipment including but not limited to, substations, switchgear, switchboards,
    iii. Panel boards (power, lighting, receptacle),
    iv. Motor control centers,
    v. Non-fusible disconnect switches (including individually mounted circuit breakers),

vi. Fusible disconnect switches,

vii. Wire ways,

viii. Bus ducts and associate components when required,

ix. Cable trays,

x. Automatic transfer switches,

xi. Transformers,

xii. Uninterruptible power supplies,

xiii. Generators,

xiv. Miscellaneous electrical components, etc.

2. For new installations label cubicle/compartment/spaces for all Switchgear, Switchboards and MCCs. Label each disconnecting and overcurrent protective device, meter and control device mounted in compartment doors with a nameplate.
3. Identify fuse type and size on the cover of fusible equipment
4. Time Delay: Provide 1/8-inch lettering at the control location to identify a motor having a time delay relay – “Time Delay Start to limit System Inrush”.
5. Identify soft start on motor starter.
6. All nameplates shall be engraved.
7. Securely attach engraved nameplates using epoxy adhesive.
8. No temporary markings are permitted to remain on equipment.
9. Coordination with the DOA “Assess Management” department is required to determine if specific asset tagging requirements are applicable to the scope of work.

C. Color Scheme for Engraved Electrical Nameplate Labels

Table 2 – Nameplate Voltage Color Identifier

System	Label Background Color	Lettering Color
120/240 Volts, Single Phase – Normal	Black	White
208/120 Volts, Three Phase – Normal	Black	White
480/277 Volts, Three Phase – Normal	Black	White
120/240 Volts, Single*	Red	White
208/120 Volts, Three Phase*	Red	White
480/277 Volts, Three*	Red	White

* Connected to generator power source (Emergency, Legally Required Standby and Optional Standby).

D. Nameplates: Electrical Equipment Identification Methodology

1. All new electrical equipment shall have a unique identification number.
2. The identification number shall be annotated on three lines, centered within a nameplate with a minimum ½ inch margin maintained around the outer edges.
3. The methodology used to create an electrical equipment nameplate identification number is outlined in Table 3:

Table 3 – Nameplate Label Description

Line One	Line one shall list the official H-JAIA GIS room number where equipment is located. Room numbers for existing spaces are located near each electrical room at the CPTC. For existing CPTC electrical rooms without GIS room number identification nameplates or for new proposed electrical rooms, the DSP shall contact the HJAIA DOA planning department to obtain the official GIS room number identification which is required to build unique identification labels. For CPTC electrical designs, which utilize existing open spaces, where electrical equipment will be or is located and a CPTC space number has not been assigned for this area, an identifier shall be developed by using the following method: • step one) obtain the CPTC zone number for this area by contacting the H-JAIA DOA planning department. This designator will become the first identifier for line one, • step two) add the CPTC level. This designator will become the second identifier for line one, • step three) locate the closest vertical and horizontal column identifier which is typically a letter and number and add to line separated by a back slash. This designator will become the third identifier for line one. These key designators together and separated by a hyphen will become the new electrical equipment location name. Example: CPTC zone designator is **AS17**, CPTC level number designator is **1,** and horizontal/vertical column number designators are **A/16**. Line one will now become **AS17-1-A/16**
Line Two	Line two shall include the **Power** Type - **Voltage** Type - **Equipment** type (plus sequential number) - **Source** identifier and CPTC concourse identifier. A hyphen shall be used to separate the categories identified. See Table 4, 5, 6, 7 and section 1.14 for type descriptions which shall be used when creating the identification number for line 2.
*Line Three	Line three shall include the word Concession in parentheses.

*****Applicable to concession distribution equipment only.

Table 4 - POWER TYPE IDENTIFIER

N	Normal Power
E	Standby Power
R	Legally Required
S	Life Safety
U	Uninterruptible Power Supply (UPS) Power

Table 5 - VOLTAGE TYPE IDENTIFIER

M	Medium (above 480VAC)
H	277/480 VAC, 3 phase
L	120/208 VAC, 3 phase
B	120/240 VAC, 1 phase
O	Other (24VDC and below 120VAC)

Table 6 - EQUIPMENT TYPE IDENTIFIERS:

The below listed identifier abbreviations approved by the DOA Electrical Department shall be used. To use abbreviations not listed, submit a descriptive written request to the DOA Electrical Department for approval.

Identifier	Equipment Type
AT	Automatic Transfer Switch
BD	Bus Duct
BP	Bus Plug
BTB	Bus Tap Box
CB	Cable Bus
CT	Cable Tray
DF	Fusible disconnect Switch
DP	Distribution Panelboard
DS	Non-Fusible disconnect Switch
EG	Emergency Generator
FA	Fire Alarm Control Panel
IB	Individually mounted circuit breaker
LC	Lighting Control Panel
MC	Motor Control Center
M1	Meter (number denotes the meter type)
PP	Panel board (Power, Lighting, Receptacle)
SB	Switchboard
SG	Switchgear
TR	Transformer
TV	Transient Voltage Surge Suppressor
UP	Uninterruptible Power Supply (UPS)
UT	Utility Transformer or Bus
WW	Wire way

Table 7 – CPTC CONCOURSE IDENTIFIERS

A	Concourse A	E	Concourse E
B	Concourse B	F	Concourse F
C	Concourse C	M	Main Terminal including Atrium
D	Concourse D	T	Concourse T

E. Source Identifier Methodology

1. Any electrical distribution equipment connected directly to a utility bus (or utility transformer) will be considered a SOURCE.
2. The equipment type identifier shown in table 4 shall be used to identify the source.
3. Once the source equipment type identifier has been defined, a proxy shall be assigned using letter **S** (for source) followed by a numeric number and location. Locations are as follows:
   a. Example: three Switchgear and two Switchboard's fed directly from the utility bus and all equipment located in the same CPTC electrical room with the official GIS room number **AS17-1- F1**: the identifications
      i. Line One Line one shall list the official HJAIA GIS room number where equipment is physically located. **AS17-1-F1**
      ii. Line Two Line two shall list the **Power** Type - **Voltage** Type - **Equipment** type (plus sequential number) - **Source** and Concourse Designator. A hyphen shall be used to separate the categories identified from Tables 4, 5, 6 and 7: **N – H – SG1 – UT – S1A.**
4. The designation **UT** will only be used in the equipment identification name at the Main SWGR or SWBD level. This **UT** identifier shall not appear in any downstream equipment identification numbers.
5. If any downstream equipment is fed from two upstream sources, then list both sources separated by a back slash, example **S1A/S2A.** See Figures 1, 2, 3 and 4 for examples.

10.0 Quality Assurance

A. Requirements

The DSP shall submit project deliverables reviewed under their approved Quality Assurance (QA) program.

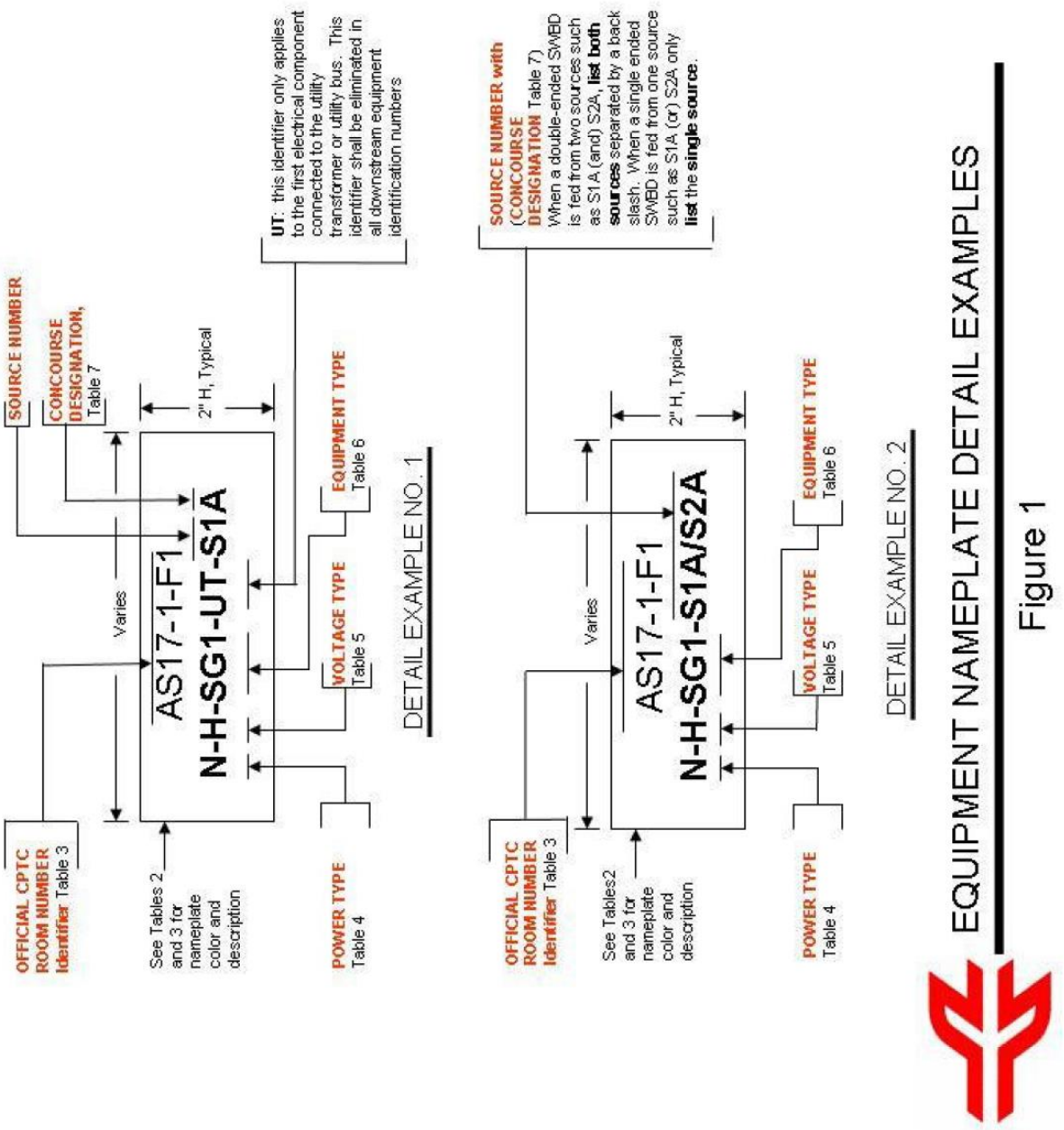
B. Redi-Check Interdisciplinary Coordination Review

The DSP shall develop and implement a “Redi-Check Interdisciplinary Coordination” review methodology to document review results.

C. Quality Assurance (QA) Checklists

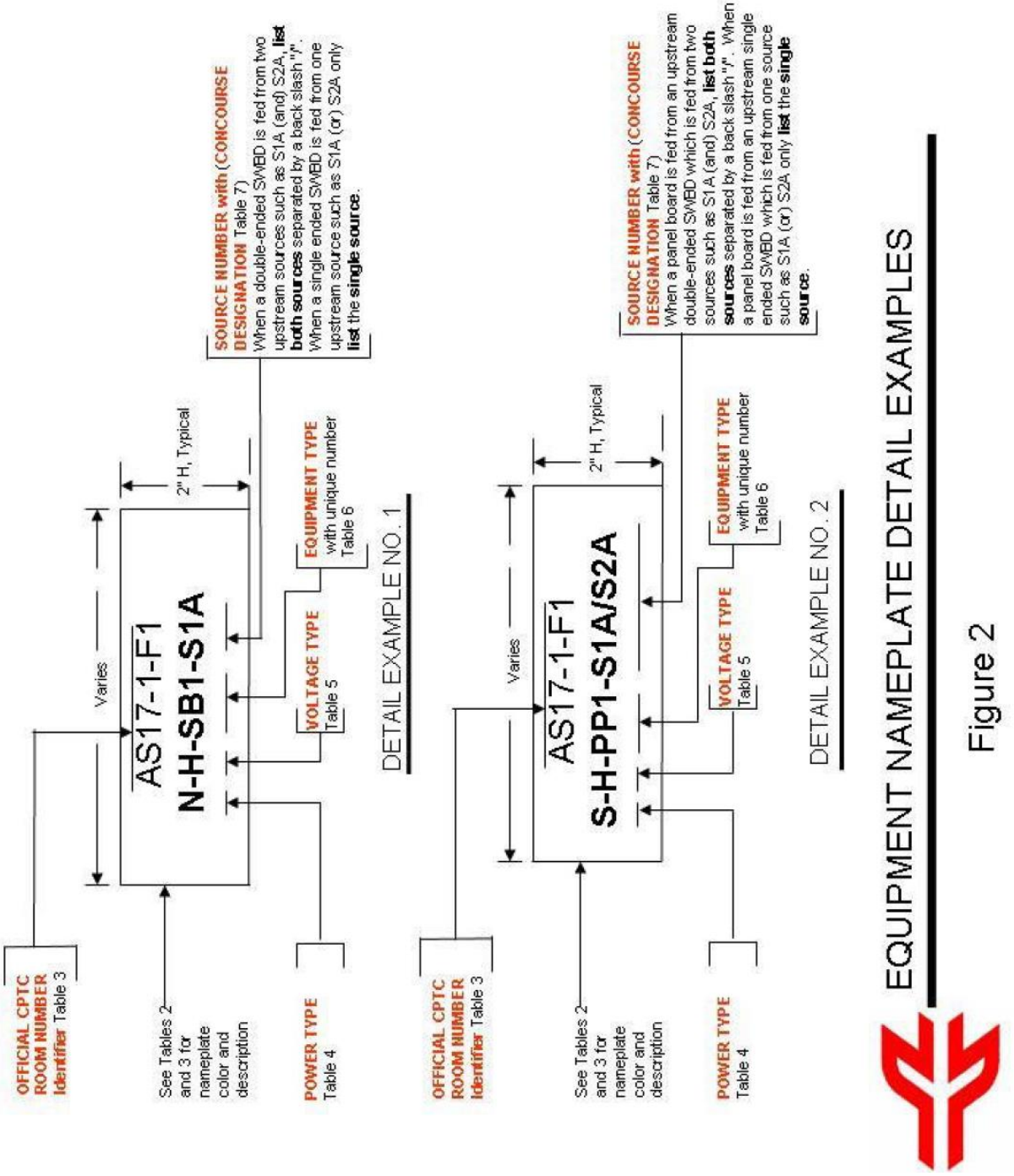
The DSP shall submit a draft QA checklist to the DOA Assistant Director Electrical (or designee) prior to all initial schematic 30% deliverable for “Capital Projects”. Once approved by DOA a completed QA checklist shall be submitted with each contract submittal to demonstrate compliance. The DSP will be notified by the DOA if the QA expectations are not met. An in-person meeting may be required to discuss the corrective actions.

Figure Index:



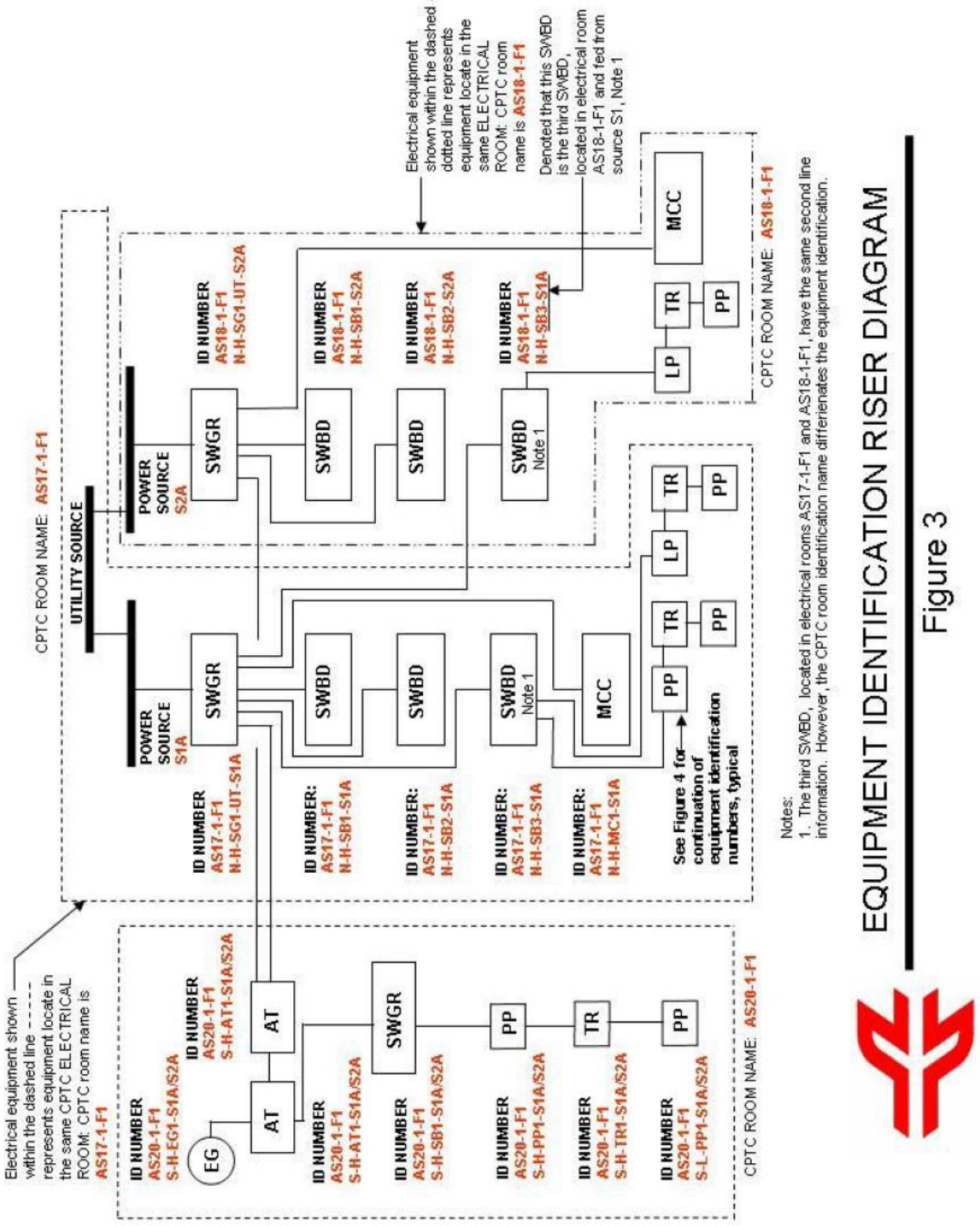
EQUIPMENT NAMEPLATE DETAIL EXAMPLES

Figure 1



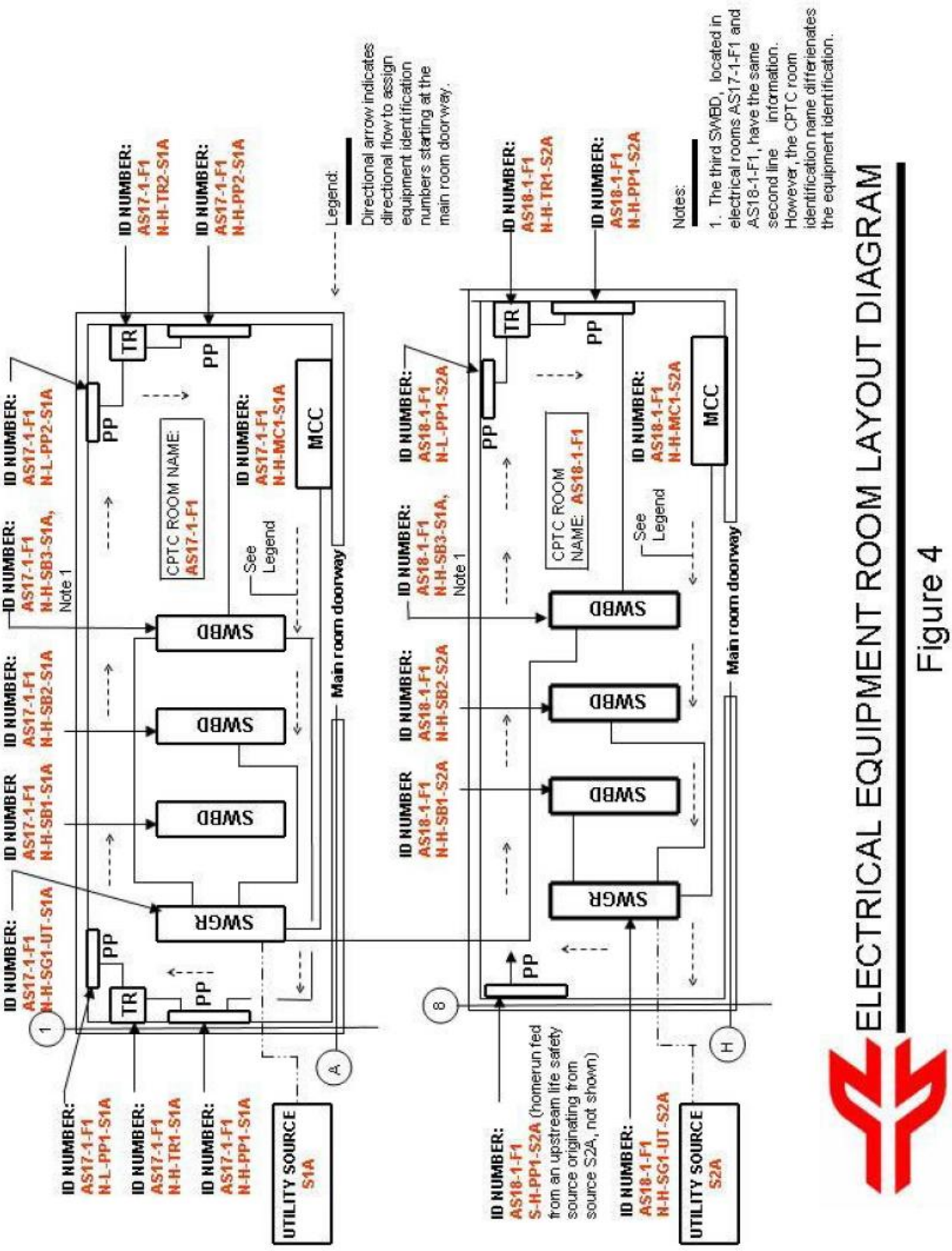
EQUIPMENT NAMEPLATE DETAIL EXAMPLES

Figure 2



EQUIPMENT IDENTIFICATION RISER DIAGRAM

Figure 3



Revision Log

07/16/2025	Reformatted entire document to include clarifying/updating existing details, adding new details, and re-installing Airfield design details.
01/12/2023	Latest Revision
09/23/2021	Latest Revision
09/03/2020	Latest Revision
12/11/2019	Latest Revision
04/18/2018	Latest Revision
10/14/2016	Latest Revision
03/07/2013	Revised color scheme for engraved electrical nameplate labels.
01/15/2013	Added branch circuit monitoring/embedded metering and equipment identification requirements for concession switchboard.
01/25/2010	Last Revision
06/27/2007	Initial release.
Last Revised Date	**Description of changes**

Hartsfield-Jackson Atlanta International Airport

City of Atlanta

Department of Aviation

Office of Infrastructure Planning & Development

Tenant
New Construction and Modifications

Design Standards

Signage

Design Standards
Signage

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Design Standards
Signage

1.0 Purpose

The purpose of this document is to provide the minimum signage requirements for New Construction and/or Modifications related to Tenant submitted projects at Hartsfield-Jackson Atlanta International Airport (ATL).

2.0 General

A. All design work shall be performed in accordance with generally accepted professional principles and practices for Signage & Graphics and in compliance with DOA/P&D Design Standards and all applicable Federal, State and City of Atlanta Design Codes, Standards and Regulations.

B. All Tenant signage including Electrical and Structural design, as required, shall be submitted to DOA/P&D for review and acceptance.

C. The following sign types shall not be permitted:

1. Animated component signs and signs employing moving or flashing lights.
2. Surface mounted box or cabinet type signs.
3. Formed plastic or injection molded signs or vacuum formed letter signs.
4. Signs fabricated from simulated materials such as wall coverings, artificial stone or wood grain plastic laminates.

3.0 Signage

A. Tenant Interior Spaces

1. Signage in any leased interior Tenant space (not to public view), can be design/implemented per the Tenant's signage standards and branding requirements.

B. Interior/Exterior Public Spaces

1. All design elements that project beyond the Tenant's lease line shall conform to DOA/P&D Signage Design Standards. DOA/P&D's Signage group shall provide specific sign type design standards upon the Tenant's request.
2. Tenant signs shall not interfere with the airport's wayfinding signs, security cameras and life safety systems.
3. Tenant signs shall not be affixed to any columns in the Terminals and Concourses.
4. Tenant signs shall not have exposed raceways, ballasts, transformers, or readily visible sign company names or labels.
5. Tenant shall not erect or affix any sign to the exterior of the leased area including windows and doors, without DOA/P&D's review and acceptance.

C. Temporary Signs

1. Temporary signs within the Tenant's lease line shall follow the same graphic design standards as permanent signage.
2. Signs may be constructed of PVC foam board or other rigid materials suitable to the surrounding environment.
3. Mounting of signs shall be by mechanical fasteners.

Hartsfield-Jackson Atlanta International Airport

City of Atlanta
Department of Aviation
Office of Infrastructure Planning & Development

Tenant New Construction and Modifications

Design Standards

Construction

Construction Standards

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Construction Standards

1.0 PURPOSE

The purpose of these Standards is to provide airport Tenants with specific Department of Aviation (DOA) requirements for performing any construction work at Hartsfield-Jackson Atlanta International Airport (ATL). Tenants shall furnish their contractors with these Standards during their pricing phase. It is the responsibility of the Tenant to ensure that their contractor and sub-contractors comply with these standards.

2.0 SCOPE

These Standards apply to all Airport Tenants (Leaseholders, Vendors, Contractors, and Sub-Contractors).

3.0 GENERAL CONDITIONS

A. Tenant Projects: All Tenant projects shall be constructed in accordance with the DOA/P&D stamped accepted documents.

B. Construction Oversight: The Tenant shall be responsible for construction oversight of all Tenant work. DOA/P&D's Facilities Construction Team may also conduct construction oversight.

C. Construction Coordination: All planned and active construction activities shall be reported by the Tenant's Contractor on a weekly, bi-weekly or monthly basis coordination meeting to be established by the Tenant.

D. Tenant Construction Standards: All Tenant construction projects shall comply with all the requirements of these Standards. Failure to comply may result in suspension of work by DOA, Office of Buildings, Atlanta Fire Department, Airport Security or Airport Police.

E. Security Requirements: Tenant's contractors and sub-contractors shall conform to all DOA Airport Operation Requirements, including Security, Badging, OCIP Badge and Custom Seals (If required). Contact DOA Security Office at (404) 530-6667 for all Security information and requirements.

F. Logistics Plan: Tenant's contractor shall develop and submit to DOA (upon request) a Logistics Plan to include dumpster locations (dumpster cover required), staging area, ramp vehicle and equipment parking locations, limits of construction, location of temporary barriers and delivery access routes prior to commencement of any construction work.

G. Safety Plan: Tenant's contractor shall submit a project specific Safety Plan to DOA (upon request). The plan shall be approved before any demolition/construction work begins. As part of the Safety Plan, the contractor shall include an emergency Contact List. The Emergency Contact List shall be updated with current information throughout the duration of the project.

H. Notifications: Tenant's contractors shall notify AATC at least seventy-two (72) hours prior to the start of any construction work and moving of personnel or material onto ATL property. Tenant shall also notify the following entities:

1. DOA @ (404)-382-5500 and Via Email: DOA.facilities@atl.com for all concessions projects.
2. TBI @ (404) 530-2021 for projects in Concourses D South, E and F.
3. DOA Landside Operations @ (404) 530- 2021 for projects in the Domestic Terminal and Concourses T, A, B, C, and D North.

4. Airside Operations @ (404) 530-6620 for all airside ramp projects.
5. AATC @ 404-530-2112 or www.aatc.org

I. Work Hours: Standard DOA approved hours for all Tenant construction work shall be performed between 11:00 PM and 5:00 AM Sunday thru Thursday. Ramp construction work shall be performed between 11:00 PM and 5:00 AM daily. In case(s) of Irregular Operations (IROPS), the hours available to a contractor or sub-contractor shall be subject to change without prior notice. DOA can only authorize daytime work if work is contained inside the approved wall in the construction area/space and if it does not cause excessive noise, dust, use of volatile organic compounds or welding.

J. Permits and Code Compliance: Tenant's contractor shall obtain all necessary federal, state, county and city permit and shall comply with all applicable laws, codes and regulations.

K. Insurance: Tenant's contractor working on the Airport controlled facilities or property shall be duly licensed and shall provide proof of adequate insurances when requested.

L. Existing Conditions: Tenant's contractor shall be responsible for site verification of all existing conditions and requesting as-built data from DOA/P&D. If any utility shall be disturbed or damaged during the construction work, the contractor shall notify DOA, Atlanta Airlines Terminal Corporation (AATC) immediately. Tenant shall be responsible for all costs associated with the repair or replacement of any damaged utility and affected property.

M. Digging: Before any digging, cutting, drilling or coring is performed, the Tenant's contractor shall be responsible for the following:

1. Contacting the Georgia Utilities Protection Center @ 1-800-282-7411 for notification to Owners of all buried utilities before digging.
2. Tenant's contractor and sub-contractors shall adhere to the rules, regulations and laws dictated by the Georgia Utilities Protection Center.
3. Tenant's contractor and sub-contractors shall protect all utilities not designated for removal, relocation or replacement in the course of the construction work.
4. In case (s) of accidental disturbance of utilities, the Tenant's contractor/sub-contractor shall immediately notify the utility Owner, DOA, and AATC.
5. Responsible for coordinating the repair of the interrupted utility per the time-line and requirements indicated by DOA and any other matters where the proposed construction may present operational problems to ATL or its Tenants.

N. Deliveries: Standard DOA approved delivery and debris removal shall only be between 11:30 PM and 5:00 AM

4.0 SPECIAL CONDITIONS

A. Construction Notice: Tenant's contractor shall furnish and install a Document Display device outside the construction barrier wall or door providing the following information:

1. Tenant's Name & Contract Information
2. Contractor's name & Contact Information
3. DOA Approved Project Start Date
4. DOA Approved Project Completion Date
5. DOA Approved Hours of Operation

B. Support Equipment: Tenant's contractor shall request permission and register all support

vehicles (cars and trucks) and construction equipment (lifts, forklifts, work boxes, trash dumpsters, etc.) operating on the ATL premises during the construction of a project. The approved vehicles shall always display the operating certificates inside front window. Identification tags shall be always attached to the construction equipment. The operating certificates and identification tags shall be obtained from DOA Landside Operations at (404) 209-4142. Unapproved vehicles and equipment shall be subject to removal by the DOA at the expense of the Tenant/Contractor. Any vehicle or piece of equipment parked in a no parking zone, outside the limits of construction, outside previously approved parking locations, or considered a hazard shall be subject to removal by the DOA at the expense of the Tenant/Contractor and/or could result in the suspension of all construction work.

C. Height Restrictions: FAA Regulations regarding the use of cranes and other equipment operating airside or extending above the roof of the building shall be strictly enforced. Tenant's contractor shall be responsible for submitting FAA Form 7460 to the DOA for review and approval (contact: ATL.7460@atl.com).

D. Temporary Barriers: Temporary interior and exterior construction wall and/or barrier shall be constructed per DOA/ATL requirements as follows:

1. No plastic "fillable" barriers shall be permitted on the Aircraft Operations Area (AOA).
2. All interior construction requires a temporary barrier.
3. Temporary barriers shall create a dust barrier and meet one of three conditions: 1) Extend to ceiling/structure above, 2) Extend to a height that shall not allow visibility of work site, 3) Provide a top enclosure to isolate the work site.
4. All barriers shall be constructed of a standard stud wall with finished drywall, painted, painted and/or graphics, cove base and trim.
5. All barriers shall be maintained in good condition throughout the entire project.
6. Barriers shall not expose non-construction personnel to pinch points, slips, trips, falls, or cut hazards.
7. Barriers shall be installed on a plywood/hardboard base per DOA/ATL requirements to prevent floor damage.
8. Access doors to the construction areas shall be self-closing, metal type and secured using a Best or equivalent seven-pin type cored locking device operator using green, orange, sand or other construction core as required by the DOA.
9. Following the project completion, all finishes (project related or adjacent to the project) shall be restored to a DOA acceptable condition.

E. Construction Area Access: Doors or openings through security barriers or partitions shall be maintain secured 24 hours a day. If the doors or openings are unlocked, properly badge or authorized contractor provided personnel shall maintain doors under continuous control observation.

F. Tools: Tenant's contractor shall maintain a tool inventory list and be responsible for ensuring that all tools and construction materials are fully secured at all times to prevent passengers or unauthorized persons from gaining access to them beyond Security Check Points and Security Screening Areas or in the Terminal Buildings.

G. Debris: All debris resulting from the construction work or incidental thereto shall be contained and promptly removed by the Tenant's contractor per ATL standards. Immediately upon completion of the construction work, Tenant's contractor shall dispose of all debris off ATL property.

H. Waste Collection and Removal: Tenant's contractor and sub-contractors shall be

responsible for the collection and removal of construction waste attributable to all Tenant construction projects per ATL Construction Waste Collection & Removal Standards. Dumpsters shall be labeled in large lettering with a 24-hour contact name and phone number to call in the event there is an issue with debris.

I. Clean Site: Tenant's contractor shall be responsible for maintaining the work site safe, clean and orderly always. Failure to comply, DOA may accomplish the same at Tenant's contractor expense and/or suspend all construction until the situation is corrected.

J. Restoration: Tenant's contractor shall be responsible for restoring contiguous areas affected by the construction work to its original condition.

K. Temporary Construction Facility Privileges: Any temporary construction facility or trailer shall be approved by DOA before installation. The contractor shall be responsible for maintaining the grounds associated with this privilege. Noncompliance in maintaining the grounds shall result in loss of this privilege. Approved facilities shall be removed at the completion of the construction project and the premises shall be restore to its original condition.

L. Protection of Airport Operation Systems: If any portion of Airport operations systems is damage by the Tenant's contractor or sub-contractors, or anyone operating under their control or direction. The Tenant's contractor or sub-contractors shall immediately notify DOA and propose both temporary and permanent repairs to restore system functions and return the system to its original condition at no additional cost to the DOA.

M. Aircraft Ramp Work: Airport Operations shall govern all ramp activities. Construction activities shall not supersede Airport Operations for any reason. When Tenant project construction requires work on the aircraft ramps, Tenant's contractor & sub-contractors shall comply with all DOA Specifications, Standards and Criteria.

N. Operating within Critical Areas: When construction work requires the Tenant's contractor and sub-contractors to conduct its operations within areas adjacent to active aircraft gates, taxi lanes, and/or the apron. The work shall be coordinated with DOA. Tenant's contractor shall request authorization from DOA forty-eight (48) hours prior to any gate closure or interference with the Aircraft Operations.

O. Technical Requirements: Tenant's contractor and sub-contractors shall be responsible for complying with the following ATL requirements:

1. Electrical Power: Any unauthorized connection to an airport power source shall be disconnected/de-energized by the Tenant's contractor or sub-contractor per DOA direction. Failure to comply, DOA shall disconnect or de-energize at Tenant's contractor/sub-contractor expense.

2. Conduit: All conduits shall be concealed from public view.

3. Floor Slab Penetrations: Tenant's contractor/sub-contractor shall be responsible for scanning (GPR or X-Ray) and providing DOA with the scan results which shall include a detailed drawing of the area to be core drilled. All floor slabs that require drilling, core drilling, embedding or demolition of any conduit and other utility lines, shall be constructed per the Architectural and Structural Design Standards, Sections 3 & 5 of this manual.

P. Abandon Penetrations: Tenant's contractor/sub-contractor shall be responsible for covering any new, existing or always abandon floor slab penetrations (Floor/Ceiling) during construction. All abandon penetrations shall be filled per the Architectural and Structural Design Standards, Sections 3 & 5 of this manual.

Q. Access Control and Alarm Monitoring System (SACS/ACAMS)

When these systems are impacted or tie-ins are required by the Tenant's construction project, the Tenant's contractor/sub-contractor shall be responsible for restoring, maintaining the integrity and be compatible with the existing ATL SACS/ACAMS system. Tenant's contractor shall coordinate with and use the existing DOA Operations & Maintenance provider to accomplish this work. All work associated with these systems shall be coordinated through DOA and shall be review and approved by DOA Security prior to start of any work. Notice shall be provided to DOA at least 48 hours prior to disturbing the existing SACS/ACAMS system.

R. Building Management System (BMS)/Fire Suppression and Life Safety Systems

When these systems are impacted or tie-ins are required by the Tenant's construction project, the Tenant's contractor/sub-contractor shall be responsible for restoring, maintaining the integrity and be compatible with the existing ATL BMS/Fire Suppression and Life Safety Systems. Tenant's contractor shall coordinate with and use the existing AATC Operations & Maintenance provider to accomplish this work. All work associated with these systems shall be coordinated through DOA and AATC prior to start of any work.

S. Environmental Requirements

When construction mitigation work is required, Tenant's contractor shall be responsible for complying with ATL Tenant Environmental Compliance Guide (contact DOA Environmental at 404-530-5500 for information). All required project specific mitigation, spill/emergency response and hazardous management plans shall be coordinated through DOA and shall be review and approve by DOA Environmental prior to start of any mitigation work.

T. Sustainability Standards

The ATL Planning and Development Bureau (P&D) has developed comprehensive Sustainable Construction Standards to apply to all DOA projects in an effort to meet City of Atlanta Ordinances, obtain certifications in industry leading Sustainability Rating Systems, and reach airport-wide sustainability goals. P&D requests that construction teams include these Standards in all construction projects where applicable, and to the highest extent possible. The implementation of these Standards is voluntary and in no way a contractual requirement. However, their maximum implementation, should be recognized as best practices, which can also contribute to the airport's overall sustainability goals of reducing energy and water consumption, waste generation, and greenhouse gas emissions.

The following are the P&D Sustainable Construction Standards for Reference only:

Construction Standards

Sustainability

1.0 Purpose

The P&D Sustainable Construction Standards are General Requirements to be applied to all projects at ATL. These General Conditions are additional guidance to Division 1: Sustainable Requirements, which should be tailored project by project based on the Credits and Prerequisites the project is pursuing for the specified Sustainability Certification.

A. PART 1 – GENERAL

1. SUMMARY

a. Includes general requirements and procedures for compliance with Sustainable Construction Standards.

b. The Contractor shall adhere to all Sustainable Construction Standards in addition to project specific sustainability requirements included in Section 018111 to meet the intended Sustainability Certification Standard (LEED®, Parksmart®, SITES®, Envision®, etc.).

i. Sustainable Construction Progress Reports: Concurrent with each Application for Payment, contractor should, where applicable, submit reports comparing actual construction and purchasing activities with sustainable reports.

ii. Contractor shall submit all Project Close-out documentation upon completion of this project to the ATL P&D Sustainability Team Project Manager.

c. Sustainable Construction Standards Submittal Checklist and Supplemental Documents will be available digitally through the ATL P&D Sustainability Team Project Manager.

2. SUBMITTALS

a. General: Sustainable Construction Standards submittals are in addition to the other required project submittals.

i. All Sustainable Construction Standards submittals shall be submitted by the Contractor Sustainability Coordinator to the ATL P&D Sustainability Team Project Manager for approval in coordination with all documentation specified in SECTION 018111

B. DEFINITIONS

1. ATL P&D Sustainability Project Manager: Department of Aviation Planning and Development Department Sustainability Program Team member responsible for managing, implementing and enforcing the P&D Sustainability Program through all project phases and coordinating documentation collection for all Submittals found in the ATL Sustainable Construction Standards.

2. Contractor Sustainability Coordinator: An approved member of the Construction Team responsible for all Submittals found in the ATL Sustainable Construction Standards and all sustainability Submittals included in SECTION 018111.

3. Sustainable Construction Standards Submittal Checklist: A checklist of all Submittals found in the ATL Sustainable Construction Standards.

2.0 CONSTRUCTION TEAM

A. SUSTAINABLE CONSTRUCTION TRADES TRAINING

1. Schedule sustainability training with ATL P&D Sustainability Team Project Manager for all key construction team members prior to commencement of the construction phase that includes the following concepts:
    a. Project-specific Sustainability Certification Standards (LEED®, Parksmart®, SITES®, or Envision®) compliance requirements in SECTION 018111.
    b. Sustainable Construction Standards: provide digital access to all attendees.
    c. Proactive sustainability: Examples of actions workers can take to be more sustainable while on site, included, but not limited to:
        i. Energy and Water efficient practices.
        ii. Recycling and proper use of single stream dumpsters (if in use).
2. SUBMITTALS
    a. Agenda for Sustainable Construction Trades Training
    b. Attendee List

B. CONTRACTOR SUSTAINABILITY COORDINATOR

1. The Contractor shall designate a Sustainability Project Coordinator to manage all Sustainable Construction Standards requirements for this project. The Sustainability Coordinator may be either an employee of contractor or consultant hired for this project.
    a. The Contractor Sustainability Coordinator shall have a LEED Accredited Professional credential or equivalent green professional credential.
    b. The designated Contractor Sustainability Coordinator shall be approved by the P&D Sustainability Team Project Manager.
    c. The Contractor Sustainability Coordinator will be responsible for compiling and submitting all sustainability Submittals and required documentation.
    d. The Contractor Sustainability Coordinator will submit all submittals and required documentation to the ATL P&D Sustainability Team Project Manager for approval. Sustainability Coordinator to use the provided templates and specified formatting.
    e. The Contractor Sustainability Coordinator will submit required Submittals and documentation concurrent with each Application of Payment.
    f. Reduction of pay application will be equivalent to the value of work not produced and/or completed based on submittal and documentation verification by the ATL P&D Sustainability Team Project Manager.
2. SUBMITTALS
    a. Provide proof of LEED Accredited Professional credential or equivalent credential.
    b. Provide proof of Sustainability Contractor experience on LEED or equivalent Sustainability Project experience.

3.0 SITE ENVIRONMENTAL MANAGEMENT

A. NON-TOXIC LANDSCAPE MAINTENANCE DURING CONSTRUCTION

1. If pesticides are used during construction, only use pesticides with a hazard tier ranking of 3 (least hazardous) as per The City of San Francisco Department of the Environment's (SFE) Hazard Tier Review Process. Guidance can be found here: https://sfenvironment.org/sites/default/files/fliers/files/sfe_th_guide_to_reduced_risk_pesticide_listposted.pdf

B. SUBMITTALS

1. Manufacturer Documentation and MSDS Sheets on all pesticides and fertilizers used on-site.

4.0 RESOURCE SELECTION AND PRESERVATION

A. CONSTRUCTION TEMPORARY LIGHTING ENERGY EFFICIENCY

1. Reduce temporary lighting energy consumption through the use of energy efficient lighting and operation protocol.
   a. Use LED lighting for all temporary construction lighting.
   b. Comply with minimum lighting requirements as defined in OSHA Standard 1926.56.
   c. Establish a schedule for when lighting is required and develop a policy to reduce lighting when not needed.
   d. Coordinate site walk during each phase of construction for P&D Sustainability Team Project Manager.
2. SUBMITTALS
   a. Provide bulb wattage for all temporary lighting used throughout construction

B. POTABLE WATER USE DURING CONSTRUCTION

1. Develop a Construction Water Use and Monitoring Plan to minimize potable water use during construction.
   a. Identify and list all on-site water uses during construction.
   b. Identify which uses can be performed utilizing non-potable or reused water.
   c. Identify possible sources of non-potable water within the ATL Campus.
   d. Monitor and report all potable and non-potable water use on site throughout the duration of the project.
2. SUBMITTALS
   a. Construction Water Use and Re-Use Log Template to be provided electronically.

C. CONSTRUCTION AND DEMOLITION WASTE DIVERSION

1. Divert a minimum of 90% of construction and demolition waste from landfills.
   a. Establish waste diversion goals for the project by identifying at least five materials (both structural and nonstructural) targeted for diversion. Approximate a percentage of the overall project waste that these materials represent.

b. Specify that at least 5 material waste streams will be collected and diverted separately

c. Reuse material on site whenever possible.

d. Work with project manager to enter waste diversion information int o a waste tracking platform such as RE-TRAC CONNECT®.

e. Follow LEED Reference Manual for Building Design and Construction version 4: Construction and Demolition Waste Management credit language, regardless of project type.

2. SUBMITTALS

a. Waste Tickets from haulers and waste management companies

b. Calculations on reuse in accordance with LEED Reference Manual for Building Design and Construction version 4: Construction and Demolition Waste Management Credit.

c. LEED Reference Manual for Building Design and Construction version 4: Construction and Demolition Waste Management Credit Required Documentation.

5.0 CONSTRUCTION VEHICLES AND EQUIPMENT

A. CONSTRUCTION VEHICLES AND EQUIPMENT GENERAL REQUIREMENTS

1. Construction shall not proceed until the contractor submits a list of all diesel on-road vehicles, non-road construction equipment, and generators to be used on-site to be confirmed by the P&D Sustainability Program Implementation Team. The list shall include the following:

a. Contractor and subcontractor name and address, including a contact person responsible for vehicles and/or equipment.

b. Equipment type, equipment manufacturer, equipment serial number, engine manufacturer, engine model year, engine certification (Environmental Protection Agency (EPA) Tier Emission rating), horsepower, engine family number, engine serial number, and expected fuel usage and hours of operation.

c. For any emission control technology installed: technology type, serial number, make, model, manufacturer, EPA/ California Air Resources Board (CARB) verification number, Tier level, installation date and hour-meter reading on installation date.

2. If the contractor subsequently needs to bring equipment on-site not on the list approved by the P&D Sustainability Team, the contractor shall submit written notification within 24 hours that attests the equipment complies with all contract conditions and provide information requested in 5.1 A

3. All diesel equipment shall comply with the pertinent local, state, and federal regulations relative to exhaust emission controls safety, or the requirements of this document, whichever is more stringent at the time of construction.

4. The contractor shall establish generator sites and truck-staging zones for vehicles waiting to load or unload materials on-site, when possible. Such zones shall be located where exhausted air pollutants have least impact on adjacent properties, the public, and surrounding structures' air intake systems.

B. CONSTRUCTION VEHICLE AND EQUIPMENT MAINTENANCE

1. Contractor shall designate an area for vehicle maintenance. Do not perform construction

vehicle and equipment maintenance and repairs outside of designated areas.

a. When possible, conduct maintenance activities under cover.

b. Maintain a log of all vehicle repairs and maintenance.

c. Ensure that hazardous wastes are recycled and/or disposed safely per local, state and federal regulations.

d. Create a Spill Response Plan for cleanup of chemical, fuel or oil spills.

e. When available, use environmentally friendly chemicals and processes.

2. SUBMITTALS

a. Prior to construction, submit The Spill Response Plan.

b. At the end of the project or upon request, submit a log of maintenance and repairs conducted on construction vehicles used during construction.

C. ROADWAY PRESERVATION DURING CONSTRUCTION

1. Ensure all surrounding roadways used by the project site are not damaged by construction activity.

a. Any existing road weight limit restrictions limit must be followed by construction-related vehicles operating on airport and public roadways.

b. Equipment with tractor treads are prohibited on public roadways.

c. Immediately report all Incidents and Accidents to ensure roadway is preserved, and if damaged, is repaired within a reasonable timeframe.

2. SUBMITTALS

a. Prior to construction, submit a list of construction vehicles operating on public roadways and the maximum load it could possibly transport.

b. Prior to construction, submit a written policy that will be used to communicate that equipment with tractor treads shall not be driven on airport or public roadways.

c. Immediately submit Accident and Incident reports (if applicable).

D. CONSTRUCTION VEHICLE IDLING PLAN

1. Implement a Vehicle Idling Inspection Program and document findings or results.

a. During periods of inactivity, idling of diesel on-road vehicles and non-road equipment shall be minimized and shall not exceed fifteen consecutive minutes.

b. Post signage for no vehicle idling in sensitive areas, such as areas within 100 feet of building air-intake systems.

2. SUBMITTALS

a. Prior to construction, submit an inventory of vehicles using alternative idle reduction technologies.

b. At the end of the project and upon request, vehicle Anti Idling Program inspection logs.

c. Prior to construction, submit a site plan that identifies areas where signage will be installed communicating idling expectations.

d. Prior to construction, provide a sample of Anti-Idling signage detail to be used in sensitive areas.

3. EXEMPTIONS

   See: Part 5 EXEMPTIONS E4-E9

E. LOW EMISSION ON-ROAD CONSTRUCTION VEHICLES

1. All on-road construction vehicles on site for more than 10 total days must have either (1) engines that meet EPA 2010 on-road emission standards (TIER 4) or (2) emission control technology verified by the EPA or the CARB to meet the EPA 2010 on-road emission standards (TIER 4), such as Selective Catalytic Reduction (SCR) systems, to reduce Nitrogen Oxide (NOx) emissions.

   a. Develop an inventory of construction vehicles, which includes vehicle type, horsepower rating, fuel type, and overall fuel usage during each phase of construction. In addition, on- road vehicle records should show official registrations, manufacturer, model and model-year.

   b. The contractor is encouraged to use alternative fuels to further reduce NOx emissions including zero NOx technology (i.e., Electric) or near zero NOx technology (i.e., natural gas or propane) when reasonably available.

2. Upon confirming that the diesel on-road construction vehicle meets one of the criteria in 5.5: A., ATL will issue a compliance sticker.

   a. All equipment on site shall display the compliance sticker in a visible, external location as designated by ATL.

3. SUBMITTALS

   a. Prior to construction, submit an inventory of vehicles that will be used for each phase of construction. Submit updates as needed.

   b. All information included in 5.5 A.: Data for on-road construction vehicles

      i. Written confirmation from the contractor that only on-road construction vehicles meeting EPA TIER 4 NOx emission levels will be used for the construction project unless otherwise exempt.

4. EXEMPTIONS

   See: PART 5 EXEMPTIONS E1-E3

F. LOW EMISSION NON-ROAD CONSTRUCTION EQUIPMENT

1. All non-road construction equipment on-site for more than 10 total days must have either engines meeting EPA Tier 3 non-road emission standards or (2) repowered engines meeting EPA Tier 3 non-road emission standards or (3) emission control technology verified by EPA of CARB for use with non-road engines to reduce NOx emissions.

   a. Develop an inventory of non-road construction equipment include type, horsepower rating, fuel type, fuel usage and hours of operation during each phase of construction. The contractor shall maintain records of manufacturer, model and model-year of equipment.

   b. The contractor is encouraged to use alternative fuels to further reduce NOx emissions including zero NOx technology (i.e., Electric) or near zero NOx technology (i.e., natural gas or propane) when reasonably available.

2. Upon confirming that the diesel non-road construction equipment has met one of the criteria in 5.6: A, ATL will issue a compliance sticker.

   a. All equipment on site shall display the compliance sticker in a visible, external location as designated by ATL.

3. SUBMITTALS

   a. Prior to construction, submit an inventory of non-road construction equipment that will be used for each phase of construction. Submit updates as needed.

      i. All information included in 5.6 A.: Data for non-road construction equipment.

      ii. Written confirmation from the contractor that only non-road construction equipment meeting at least EPA TIER 3 NOx emission levels will be used for the construction project unless otherwise exempt.

   b. At the end of the project and upon request, submit a log of maintenance and repairs conducted on all construction equipment used during construction.

4. EXEMPTIONS

   See: PART 5 EXEMPTIONS E1-E3

G. LOW EMISSION PORTABLE DIESEL GENERATORS

1. All portable diesel generators on site for more than 10 total days must have either (1) engines meeting at least the EPA Tier 2 non-road emission standards or (2) repowered engines meeting EPA Tier 2 non-road emission standards or (3) emission control technology verified by EPA of CARB for use with non-road engines to reduce NOx emissions.

   a. Develop an inventory of portable diesel generators, which includes type, horsepower rating, fuel type, fuel usage and hours of operation during each phase of construction. The contractor shall maintain records of manufacturer, model and model-year of equipment.

   b. The contractor is encouraged to use electricity from the power grid as an alternative to portable diesel generators when reasonably available to further reduce localized NOx emissions.

2. SUBMITTALS

   a. Prior to construction, submit an inventory of all portable diesel generators that will be used during construction and a plan that identifies portions of the project that may be reasonably completed using the electric grid power as an alternative to diesel generators. Submit updates as needed.

      i. All information included in 5.7 A.: Data for portable diesel generators

      ii. Written confirmation from the contractor that only diesel generators meeting at least EPA TIER 2 NOx emission levels will be used for the construction project unless otherwise exempt.

3. EXEMPTIONS

   a. See PART 5 EXEMPTIONS E1-E3

6.0 EXEMPTIONS

A. APPLIES TO: 5.5, 5.6, and 5.7

If the contractor can prove to ATL's satisfaction that for a particular class of on-road diesel vehicle, diesel non-road construction equipment, or diesel generator, that (1) no alternative equipment with the specified TIER level is available, (2) it is not technically feasible to meet the control level specified above with a verified device, or (3) installing the control device would create a safety hazard or impair visibility for the operator, then the contractor may, with ATL's written approval, drop down to a lower level of Tier rating. For any approved lower level-Tier

equipment, the contractor shall provide a plan describing step to minimize NOx emissions whenever a forecast projects the Air Quality Index will exceeding 100 for Atlanta. https://airgeorgia.org

B. APPLIES TO: 5.5, 5.6, and 5.7

ATL may create an exemption when there is a compelling emergency need to use diesel vehicles or engines that do not meet the contract conditions for emissions controls. An example would be the need to rescue vehicles or other equipment to prevent or remedy harm to human beings or nearby property. Meeting contract deadlines, failure to rent equipment in a timely manner, planned unavailability, or lack of advance planning are not considered compelling emergencies.

C. APPLIES TO: 5.5, 5.6, and 5.7

ATL may provide an exemption lasting no more than 30 days to a contractor, if the contractor can prove with valid documentation and to ATL's satisfaction that the appropriate emission control equipment has been ordered in a timely manner after the bid was awarded but has yet to be installed due to delays attributable to the equipment manufacturer and beyond control of the contractor. The contractor must install the retrofit as soon as practicable once it has been delivered and shall submit proof thereof when installation is complete. Provided, however, that such exemption shall not be available to a contractor who already owns an equivalent piece of equipment that meets the engine requirements for the project, as the contractor may use that piece of equipment.

D. APPLIES TO: 5.4

When an on-road diesel vehicle or non-road construction equipment is forced to remain motionless because of traffic conditions or mechanical difficulties over which the operator has no control.

E. APPLIES TO: 5.4

To bring the on-road diesel vehicle, non-road construction equipment, or generator to the manufacturer's recommended operating temperature.

F. APPLIES TO: 5.4

When there are regulations requiring temperature control for driver or passenger comfort and there are no auxiliary power sources available to provide temperature control.

G. APPLIES TO: 5.4

When it is necessary to operate auxiliary equipment located in or on the diesel vehicle or construction equipment, to accomplish the intended use of the vehicle or equipment (for example, cranes and cement mixers).

H. APPLIES TO: 5.4

When the on-road diesel vehicle, non-road construction equipment, or generator is being repaired, if idling is necessary for such a repair.

I. APPLIES TO: 5.4

When the on-road diesel vehicle, non-road construction equipment, or generator is queued for inspection, if idling is necessary for such inspection.

Atlanta Fire Rescue Department Plan Review Requirements

I. FIRE SITE REVIEW REQUIREMENTS

<u>Site and Utility Plans to include</u>:

- Fire Department site access.
- *Roadway width(s)
  - ✓ 20 ft. minimum and 13ft. 6 in. vertical clearance.
  - ✓ 26 ft. minimum for buildings 30ft or higher.
- *Turning radius:
  - ✓ Structure with 3 stories or less – inside radius - 28ft. and outside radius - 48 ft.
  - ✓ Structure more than 3 stories – inside radius - 35ft. and outside radius - 50ft. ***Note: ARFF (Aircraft Rescue Fire Fighting) apparatus radius shall be verified.**
- Show overhead power lines within 20ft. of fire access road.
- *Gates – (specify mode of operation).
- *Knox Box(s) equipment location(s) i.e. breezeways, gates, entrances.
- *Location of all fire hydrants located within proximity of proposed project. *100ft. from FDC (Fire Department Connection(s).
- *FDC (Fire Department Connection(s), standpipe connection, sprinkler test headers, PIV (Post Indicator Valves) locations.
- *Exit discharge from the proposed structure(s).
- *Transformer(s) location(s).
- Parking decks.
- *Generators.
- *ASTs/USTs. (Aboveground Storage Tanks/Underground Storage Tanks) - ***Note: Must be shown on both Site and Utility Plans.**

II. FIRE REVIEW FOR NEW/RELOCATION/REMOVAL OF ABOVE OR BELOW GROUND TANK OR FUEL DISPENSING UNIT

<u>General Information</u>:

Applicable codes:

- ✓ NFPA 30 Flammable and Combustible Liquids Code.
- ✓ NFPA 30A Automotive and Marine Service Station Code.
- ✓ NFPA 37 Standard for Installation and Use of Stationary Combustion Engines and Gas Turbines.
- ✓ NFPA 70 National Electrical Code.

***Note: Most current code edition shall apply**

<u>Site Plan to include</u>:

- Location of tank, drawn to scale.
- Distance from buildings, observation wells, vents, hazardous features such as electrical equipment and incinerators.
- Distance from property lines, parking and drives.

Structural Plans to include:

- Identify type of liquid being stored.
- Identify type of storage: above ground, underground, container or portable tank.
- Specify volume of each tank in gallons.
- Section to scale through above ground tank and containment showing dimensions, calculation of containment volume, shape, dimensions, and construction of containment, tank base, fireproofing for metal tank supports, anchorage and venting.
- Section through underground tank(s) and excavation showing depths, physical dimension of tanks, backfill, anchorage (if required), venting and cathodic protection.
- Details for fuel dispensing units designating solenoid valves, shear valves, hose breakaway valves and emergency power shut-off switch.
- Manufacturers cut sheets – describe tank and all appurtenances indicated above and specify applicable UL listing information (e.g. UL 142 or UL 2085 tanks).
- Location and type of fire extinguishers.
- Description of vapor recovery system.

III. FIRE ASSEMBLY REVIEW REQUIREMENTS

- ✓ Seating layout or floor plan if no seating is required.
- ✓ Full set of architectural plans.

Life Safety Plan to include:

- Occupant load, Egress capacities and Exit Remoteness calculations.
- Travel distances, Common Path Travel and Dead-End limitations.
- Exit discharge termination at a public way.
- Exit signs, emergency lighting and pull Station locations
- Fire extinguisher locations and type.
- Fire rated walls.
- Furniture/Fixture/Equipment layouts.
- Symbols legend.
- Room identifications.
- Fire protection (sprinklered or non-sprinklered).
- P/H (Panic hardware).

***Note: Seated capacity must be noted on plans.**

IV. APPROVED QUALIFIED CONTRACTORS for IFC 510 and EMERGENCY RESPONDER RADIO COVERAGE TESTING

The following structures are not required to comply with the requirements of IFC Section 510:

- ✓ Buildings with no more than two occupiable stories, no more than 12,000 total square feet, and no floors below grade.

- ✓ Temporary buildings including tents when permitted by the Fire Marshal. For additions to buildings, unless the exceptions above are met for the area of the addition, the entire building being expanded must meet IFC 510 requirements.

V. FIRE ALARM REVIEW ITEMS FOR APPROVAL

- Riser Diagram "Point to Point" diagram and wire legend.
- Battery Calculations and Voltage Drop Calculations.
- Accurate Legend of Symbols for All Fire Alarm Devices Being Installed.
- Identification of Type of Wiring Used, Including Gauge and Wire Counts.
- The Matrix of Sequence of Operation/Events When Alarm System Is Activated.
- Stamp and Signature of the Designer in Responsible Charge of the Project.
- Location of FACP (Fire Alarm Control Panel), Annunciators, DACT's (Digital Alarm Communicator Transmitter), Power Extenders and Command Centers.
- Speaker wattages and decibel ratings for both horn alarm and voice evacuation system.
    - ✓ Components.
- The candela rating shown for drawing for each strobe device and each illuminated emergency.
    - ✓ Exit sign.
- Fire Alarm Systems with more than 6 devices and no new control panel installation or major
    - ✓ Modification to the system.

***Note – Fire alarm plan is a separate review and shall be submitted by the contractor elected to install.**