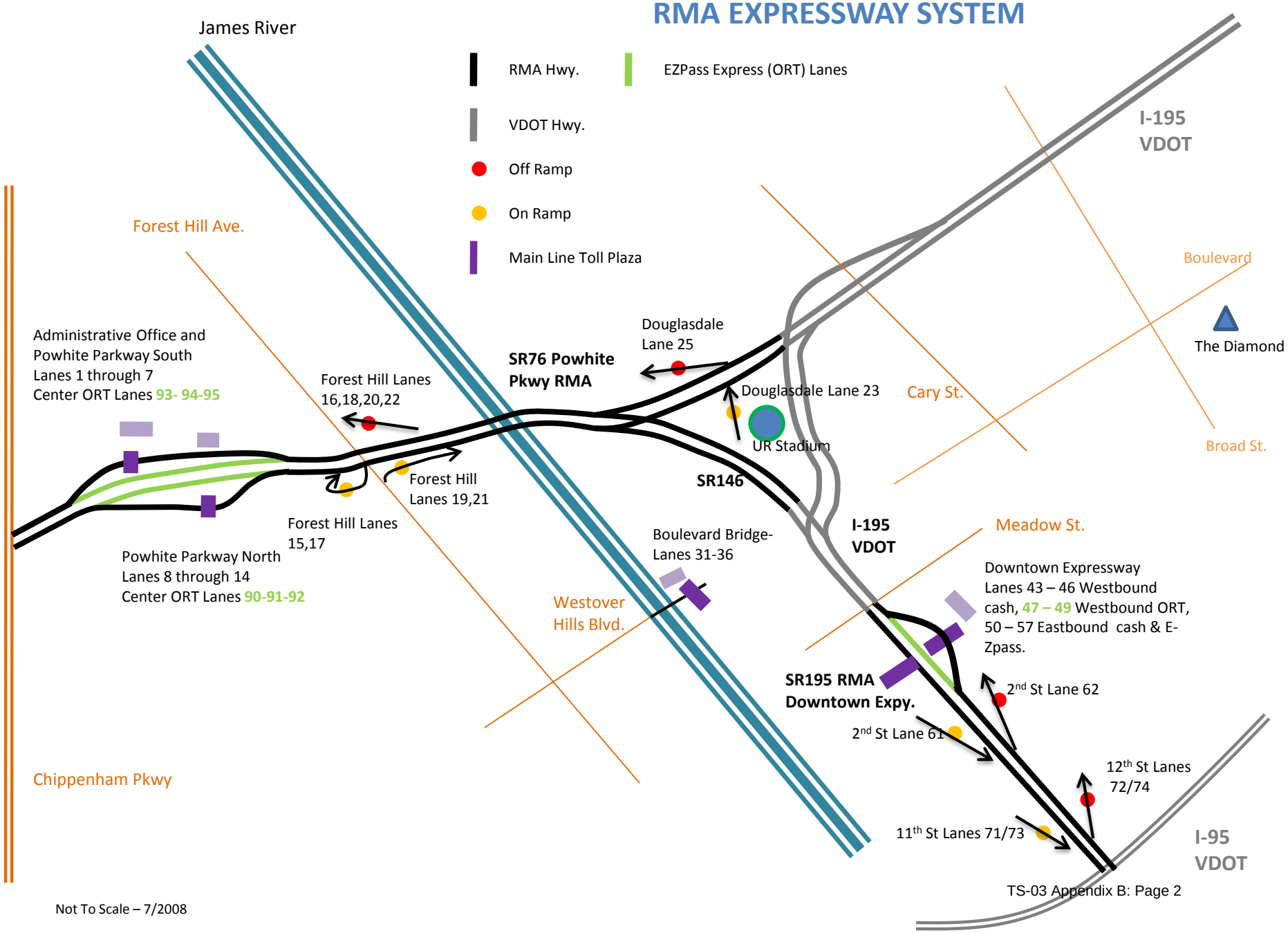
TS-03 APPENDIX B: REFERENCE DRAWINGS

The purpose of the TS-03 APPENDIX B Reference Drawings is to provide a general description of certain of the scope and technical requirements of RMTA's Toll Collection System, and RMTA DOES NOT REPRESENT OR WARRANT THAT THE INFORMATION CONTAINED IN TS-03 APPENDIX B REFERENCE DRAWINGS IS EITHER COMPLETE OR ACCURATE OR IN CONFORMITY WITH THE REQUIREMENTS OF RMTA-PROVIDED APPROVALS. All Proposers are advised that the Work to be undertaken under the RFP is to be performed by the winning Proposer, and each Proposer, by submitting a proposal, understands and agrees that RMTA shall not be responsible or liable in any respect for any losses whatsoever suffered by any Proposer by reason of any use of any information contained in TS-03 APPENDIX B Reference Drawings. Each Proposer further acknowledges and agrees that, by submitting a proposal, (a) if and to the extent it or anyone on its behalf uses any of such information in any way, such use is made on the basis that the Proposer, and not RMTA, has approved and is responsible for such information, and (b) the Proposer is capable of conducting and is obligated hereunder to conduct any and all studies, analyses, diligence and investigations as it deems advisable to verify or supplement such information, and that any use of such information is in all respects at each Proposer's own risk and in its own discretion.

TABLE OF CONTENTS

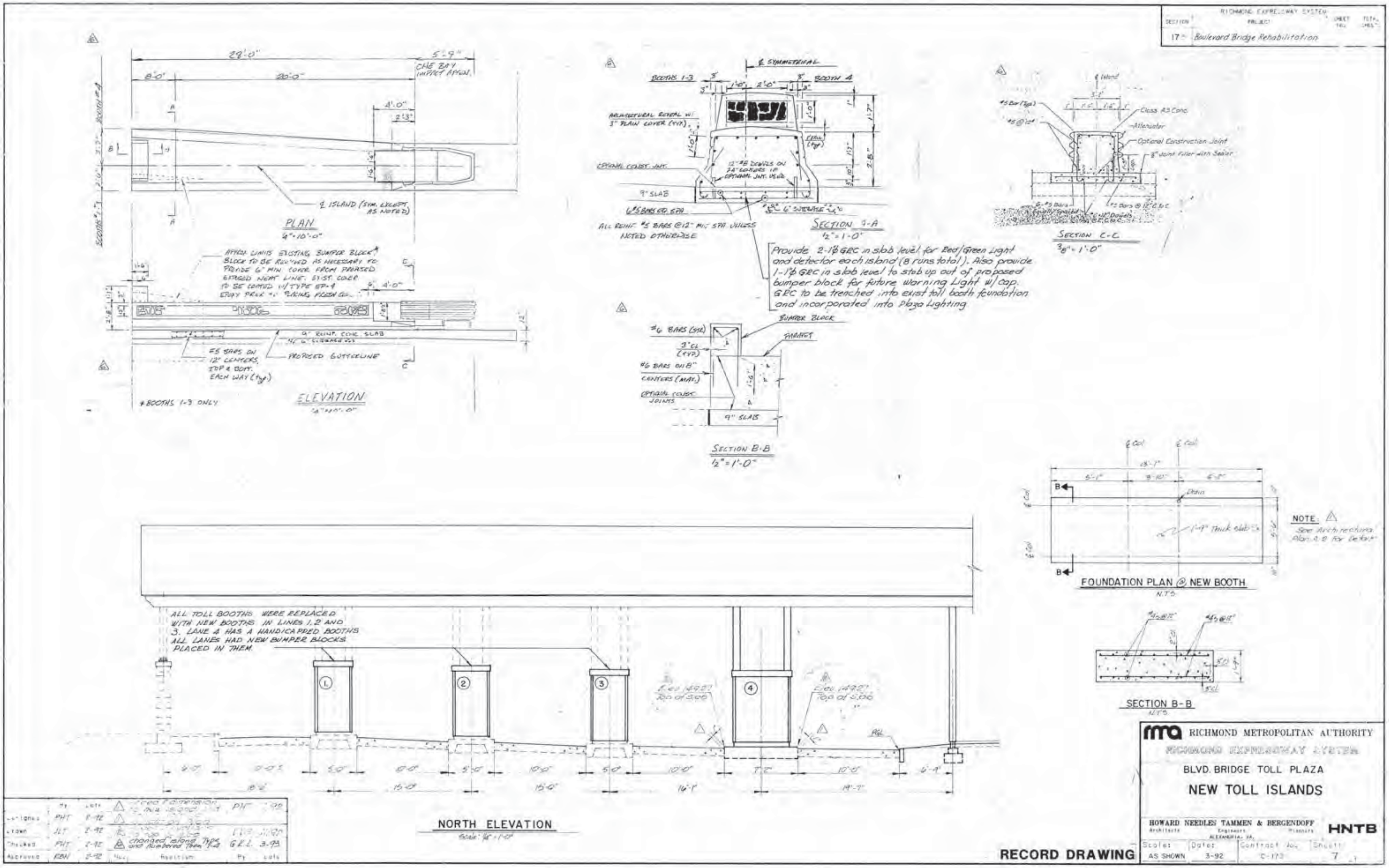
RMA EXPRESSWAY SYSTEM

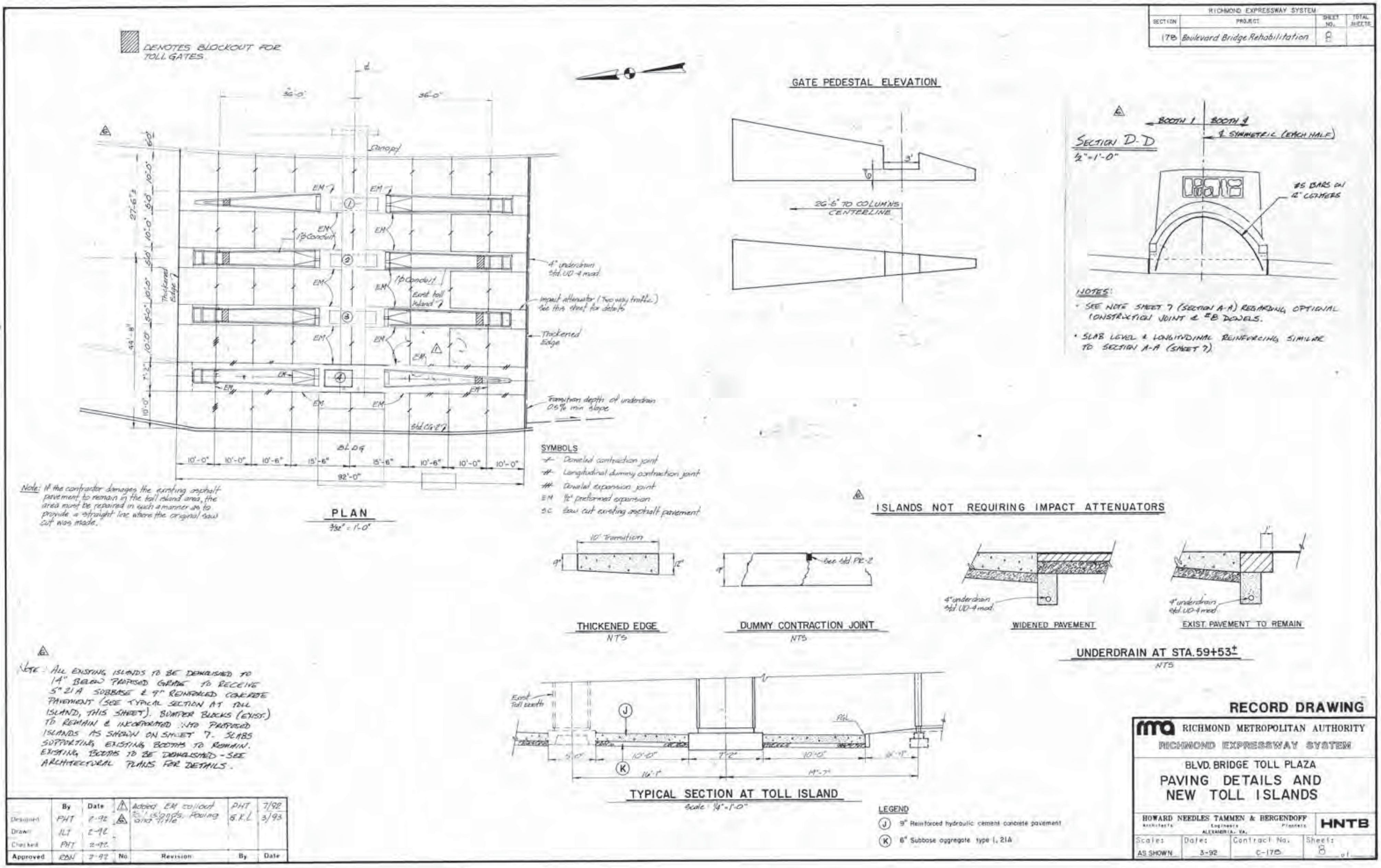


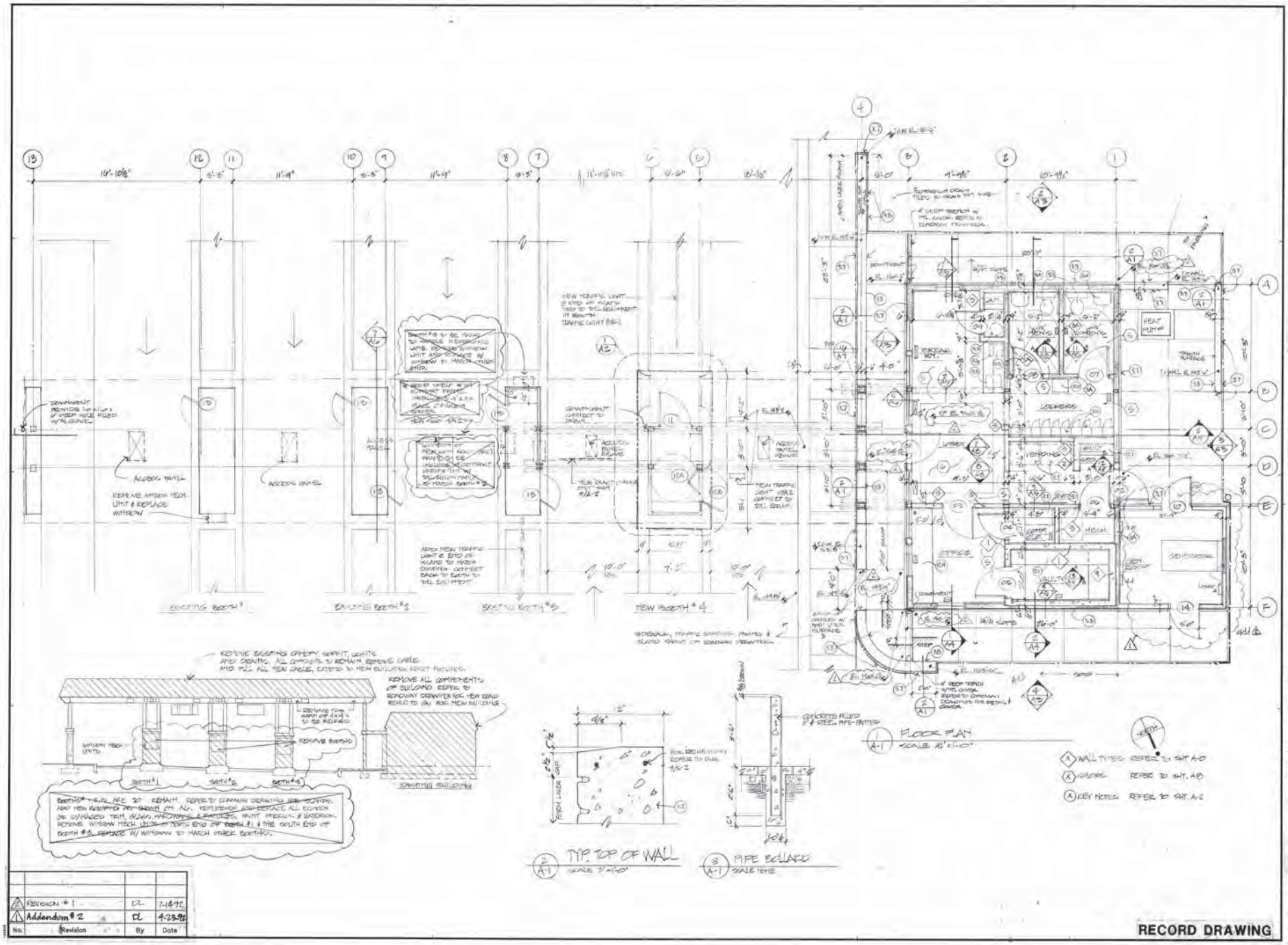
Not To Scale – 7/2008

BOULEVARD BRIDGE TOLL PLAZA

TOLL PLAZA AND ADMINISTRATION BUILDING


RICHMOND EXPRESSWAY SYSTEM
17 Boulevard Bridge Rehabilitation
PLAN
ELEVATION
*BOOTHS 1-3 ONLY
SECTION A-A
½" = 1'-0"
ALL REINF. #5 BARS @12" MAX SPA UNLESS NOTED OTHERWISE
Provide 2-1½"Ø GRC in slab level for Red/Green Light and detector each island (8 runs total). Also provide 1-1½"Ø GRC in slab level to stub up out of proposed bumper block for future warning light w/ cap. GRC to be trenched into exist toll booth foundation and incorporated into Plaza Lighting.
SECTION C-C
⅜" = 1'-0"
SECTION B-B
½" = 1'-0"
FOUNDATION PLAN @ NEW BOOTH
N.T.S.
NOTE: See Architectural Plan for Details
SECTION B-B
N.T.S.
ALL TOLL BOOTHS WERE REPLACED WITH NEW BOOTHS IN LINES 1, 2 AND 3. LANE 4 HAS A HANDICAPPED BOOTHS. ALL LANES HAD NEW BUMPER BLOCKS PLACED IN THEM.
NORTH ELEVATION
RECORD DRAWING
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
BLVD. BRIDGE TOLL PLAZA
NEW TOLL ISLANDS
HOWARD NEEDLES TAMMEN & BERGENDOFF
HNTB
AS SHOWN
3-92
7


RICHMOND EXPRESSWAY SYSTEM
SECTION | PROJECT | SHEET NO. | TOTAL SHEETS
178 | Boulevard Bridge Rehabilitation | 8
DENOTES BLOCKOUT FOR TOLL GATES
GATE PEDESTAL ELEVATION
26'-6" TO COLUMNS CENTERLINE
SECTION D-D
½"=1'-0"
BOOTH 1
BOOTH 2
SYMMETRIC (EACH HALF)
#5 BARS ON 12" CENTERS
NOTES:
• SEE NOTE SHEET 7 (SECTION A-A) REGARDING OPTIONAL CONSTRUCTION JOINT & #8 DOWELS.
• SLAB LEVEL & LONGITUDINAL REINFORCING SIMILAR TO SECTION A-A (SHEET 7)
Canopy
4" underdrain Std. UD-4 mod.
Impact attenuator (Two way traffic) See this sheet for details
Thickened Edge
Transition depth of underdrain 0.5% min slope
Std. CG-7
BLDG
92'-0"
PLAN
3/32" = 1'-0"
Note: If the contractor damages the existing asphalt pavement to remain in the toll island area, the area must be repaired in such a manner as to provide a straight line where the original saw cut was made.
SYMBOLS
Doweled contraction joint
Longitudinal dummy contraction joint
Doweled expansion joint
EM ½" preformed expansion
SC Saw cut existing asphalt pavement
ISLANDS NOT REQUIRING IMPACT ATTENUATORS
10' Transition
THICKENED EDGE
NTS
See Std. PE-2
DUMMY CONTRACTION JOINT
NTS
4" underdrain Std. UD-4 mod.
WIDENED PAVEMENT
EXIST. PAVEMENT TO REMAIN
UNDERDRAIN AT STA. 59+53±
NTS
Note: ALL EXISTING ISLANDS TO BE DEMOLISHED TO 14" BELOW PROPOSED GRADE TO RECEIVE 5" 21A SUBBASE & 9" REINFORCED CONCRETE PAVEMENT (SEE TYPICAL SECTION AT TOLL ISLAND, THIS SHEET). BUMPER BLOCKS (EXIST.) TO REMAIN & INCORPORATED INTO PROPOSED ISLANDS AS SHOWN ON SHEET 7. SLABS SUPPORTING EXISTING BOOTHS TO REMAIN. EXISTING BOOTHS TO BE DEMOLISHED - SEE ARCHITECTURAL PLANS FOR DETAILS.
Exist. Toll booth
TYPICAL SECTION AT TOLL ISLAND
Scale: ¼"=1'-0"
LEGEND
(J) 9" Reinforced hydraulic cement concrete pavement
(K) 6" Subbase aggregate type I, 21A
| By | Date | No. | Revision | By | Date
Designed PHT 2-92 | 1 | Added EM callout | PHT | 7/92
Drawn JLT 2-92 | 2 | To islands, Paving and title | S.K.L. | 3/93
Checked PHT 2-92
Approved RBN 2-92
RECORD DRAWING
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
BLVD. BRIDGE TOLL PLAZA
PAVING DETAILS AND NEW TOLL ISLANDS
HOWARD NEEDLES TAMMEN & BERGENDOFF
Architects Engineers Planners
ALEXANDRIA, VA.
HNTB
Scale: AS SHOWN
Date: 3-92
Contract No. C-178
Sheet: 8



COMMONWEALTH OF VIRGINIA
CARY C. GOODMAN
No. 0485
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99 CANAL CENTER PLAZA
ALEXANDRIA, VIRGINIA 22314
TEL. (703) 684-2700

Richmond Metropolitan Authority

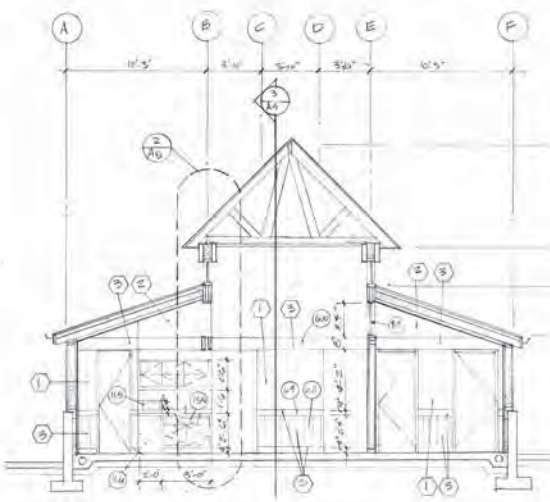
PROJECT NO: 4257
DATE:
DRAWN BY:
CHECKED BY:
CHECKED BY:
REVISED DATE:

BOULEVARD BRIDGE
TOLL PLAZA BUILDING

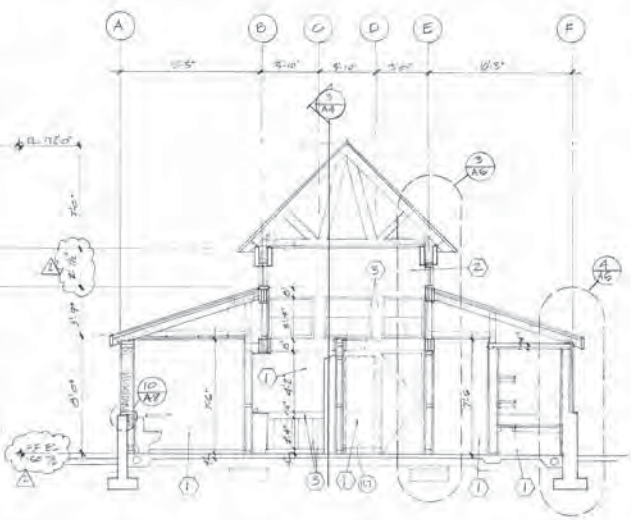
DRAWING TITLE:
FLOOR PLAN

CONTRACT NO. 17B
36.3
DRAWING NUMBER:
A-1

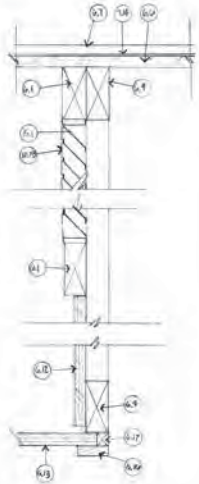
No.	Revision	By	Date
1	Revision # 1	DL	7-18-95
2	Addendum # 2	DL	9-23-95



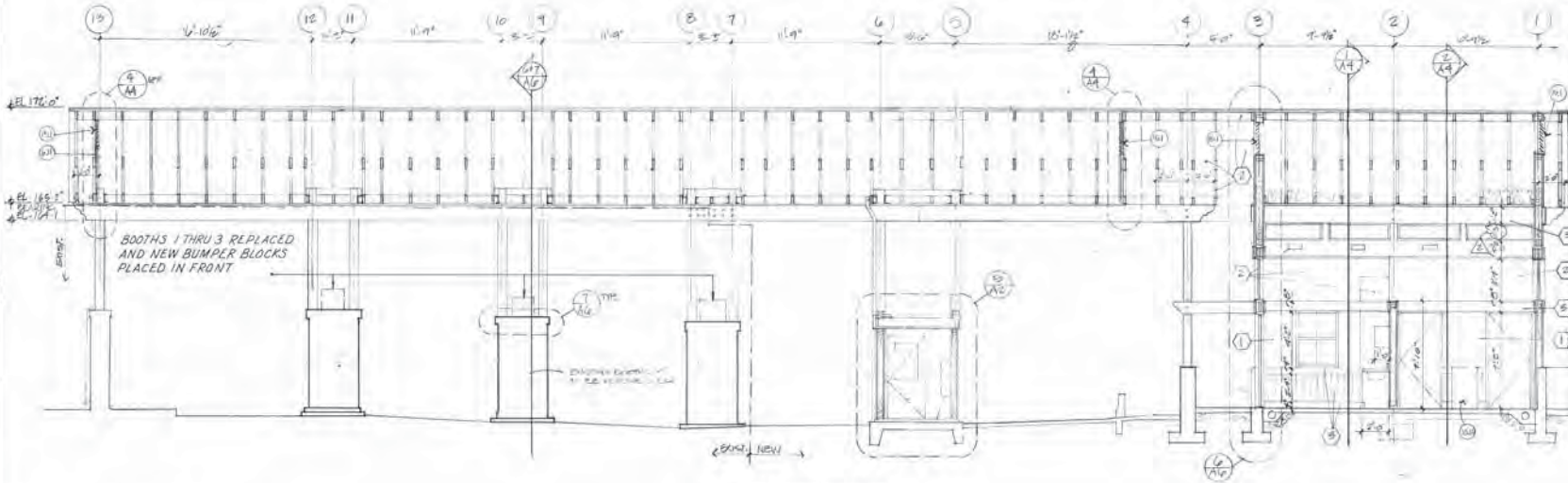
1 BUILDING SECTION
A4 SCALE 1/8"=1'-0"



2 BUILDING SECTION
A4 SCALE 1/8"=1'-0"



4 LOUVER DETAIL
A4 SCALE 3"=1'-0"



3 BUILDING SECTION
A4 SCALE 1/8"=1'-0"

Key Notes:

03000 SITE

2.1 Earth subgrade
2.2 Compacted granular fill
2.3 Drainage gravel
2.4 Drain tile
2.5 Steel pipe bollard

03000 Concrete

3.1 Conc. footing
3.2 Conc. foundation wall
3.3 Conc. slab on grade
3.4 4" conc. topping slab
3.5 Conc. walk
3.6 Conc. curb
3.7 Formed and stained conc. surface
3.8 Smooth conc. finish
3.9 Conc. wall

05000 Steel

5.1 Reinf. Sd. Bar
5.2 6'x6'x10 welded wire fabric
5.3 Steel angle
5.4 Steel plate
5.5 Steel channel
5.6 4x6 stl. tube column
5.7 4x4 stl. tube column
5.8 1/2" RC resilient channel
5.9 16ga. galv. sheet metal
5.10 1 1/2" mtl. roofing deck
5.11 C6x13 guardrail
5.12 1 1/2" mtl. Z channel
5.13 7/8" flat channel
5.14 Painted mtl eave vent (cont.)

06000 Wood

6.1 2x4
6.2 2x6
6.3 2x8
6.4 Pre-manufactured wood truss
6.5 4x14 wood beam
6.6 3/4" sheathing
6.7 Sawn wood shingles
6.8 Wood base
6.9 1x wood trim kerfed
6.10 2x wood trim
6.11 1x4 T&G wood siding w/V groove
6.12 Rough sawn 3/4" plywd. 4"O.C.
6.13 3/4" exterior plywood
6.14 2x10 facia plate
6.15 4x4
6.16 Batten board
6.17 Wood blocking
6.18 Wood trim

07000 Thermal & Moisture

7.1 G.I. flashing
7.2 Sealant
7.3 3 1/2" batt insulation
7.4 5 1/2" Fiberglass batt insul.
7.5 7 1/2" Fiberglass batt insul.
7.6 3 1/2" blown-in insulation
7.7 1 1/2" rigid insul.
7.8 Tapered rigid roof insulation
7.9 2" PVC weep w/screen on inside face
7.10 Single ply Hypalon roofing membrane
7.11 Termination bar
7.12 Pre-finished rain gutter
7.13 Rain leader
7.14 Building paper
7.15 Vapor barrier
7.16 Moisture barrier

08000 Doors & Windows

8.1 Metal security door
8.2 HM frame
8.3 Wood frame
8.4 Clad wood double hung window w/screen
8.5 Clad wood fixed window
8.6 Fixed wood window
8.7 1" insulated glass (clear)
8.8 1" insulated glass (tinted)
8.9 1/4" clear glass
8.10 Alum. threshold
8.11 Alum. door

09000 Finishes

9.1 3/8" Gypsum Wallboard (gyp.bd.)
9.2 5/8" WF Gypsum wallboard
9.3 Vinyl composition tile (VCT)

10000 Specialties

10.1 Toilet tissue dispenser
10.2 Soap dispenser
10.3 Paper towel dispenser
10.4 Grab Bar
10.5 Mirror
10.6 Feminine napkin receptacle
10.7 Mop service sink
10.8 Mop hanger
10.9 Drinking fountain
10.10 Lockers
10.11 Fire extinguisher & Cabinet
10.12 Bug screen

11000 Equipment

11.1 Toll computer (NIC)
11.2 Toll modem (NIC)
11.3 Toll P.C. (NIC)
11.4 Toll coin equipment (NIC)
11.5 Microwave
11.6 Undercounter refrigerator
11.7 Vending Machines (NIC)

12000 Furnishings

12.1 Wood shelving
12.2 Kitchen cabinets w/ plast. laminate
12.3 Plastic laminate counter top
12.4 Plastic laminate counter
12.5 Bulletin board

15000 Mechanical

15.1 Pre-finished metal louver
15.2 Electric Water heater
15.3 Toilet
15.4 Lavatory
15.5 Kitchen sink
15.6 Heat pump condenser unit
15.7 Heat pump fan unit
15.8 perimeter duct
15.9 Feeder duct
15.10 Rooftop Mech. unit
15.11 Electrical space heater

16000 Electrical

16.1 Emergency Generator
16.2 Light fixture
16.3 Traffic light
16.4 Lighting panels

No.	Revision	By	Date
1	REVISION # 1	DL	7-14-98

RECORD DRAWING

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ALEXANDRIA, VIRGINIA 22314
TEL. (703) 684-2700

rma Richmond Metropolitan Authority

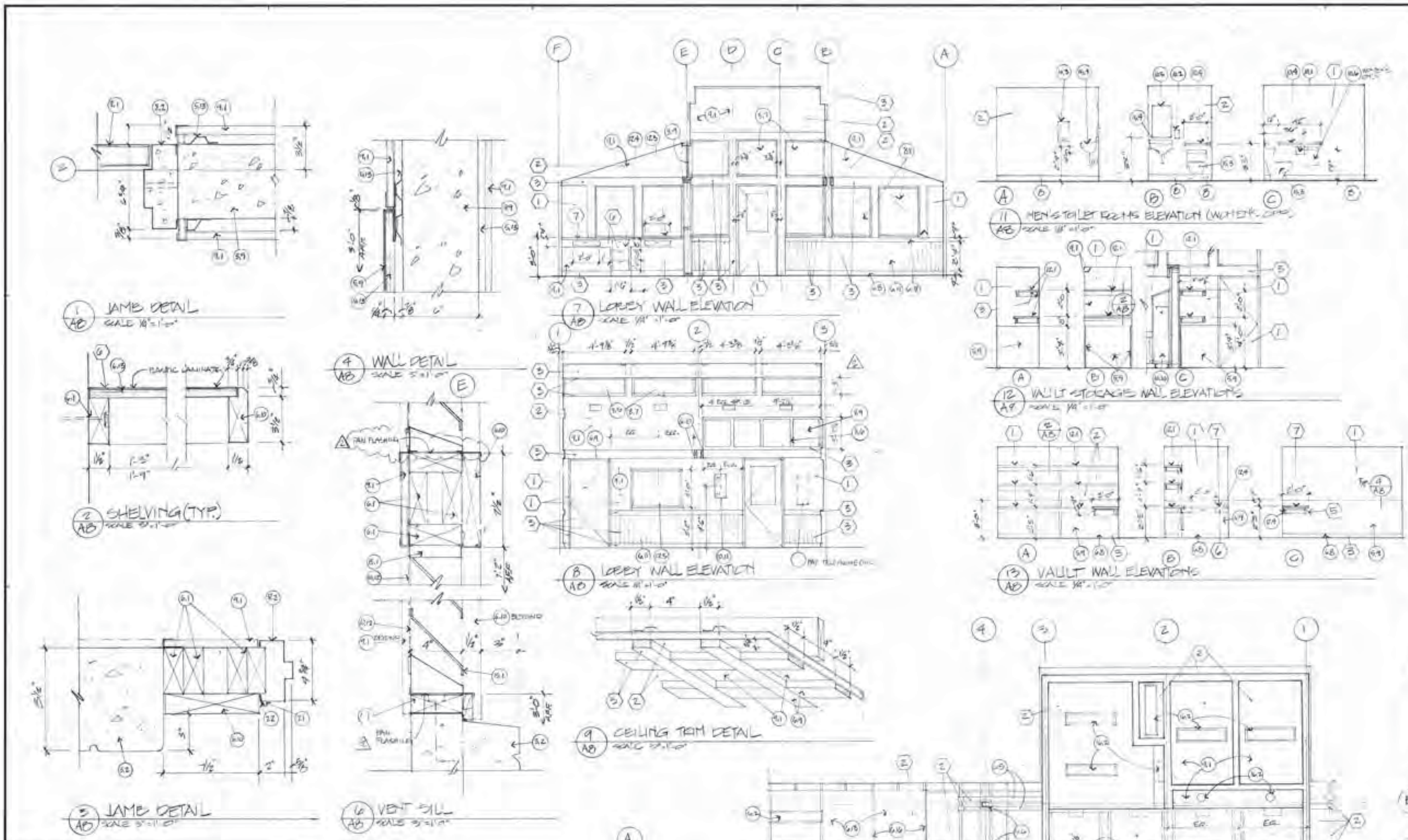
PROJECT NO:
DATE:
DRAWN BY:
CHECKED BY:
CHECKED BY:
REVISED DATE:

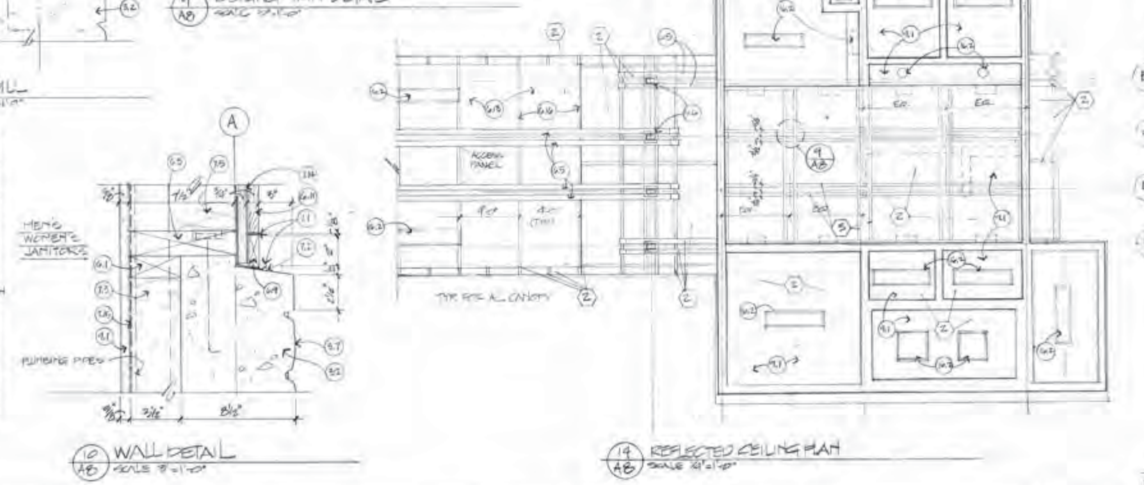
BOULEVARD BRIDGE TOLL PLAZA BUILDING

DRAWING TITLE:

BUILDING SECTIONS

CONTRACT NO. 17B
36.6
DRAWING NUMBER:
A-4





COLOR SCHEDULE

⬡	COLOR NAME	NUMBER	MANUFACTURER	FINISH/STYLE
PAINT				
1	CARRIAGE HOUSE	5381W	DURON	SEMI-GLOSS
2	SHELL WHITE	6770W	DURON	SEMI-GLOSS
3	STAIN COLOR TO BE	SELECTED FROM	MANUF. STANDARD	ADJUST STAIN FOR VARIOUS WOOD TYPES
4	ASTEROID	6414D	DURON	SEMI-GLOSS
FLOOR TILE				
4	TAUPE	51909	ARMSTRONG STANDARD	IMPERIAL TEXTURE EXCELON
5	SAND STUCCO	52123	ARMSTRONG PREMIUM	CEMETEX EXCELON
PLASTIC LAMINATE				
6	GREIGE	SG210	PIONITE	SUEDE
7	TAWNY WHITE	TW815	PIONITE	SUEDE
BASE (RUBBER)				
8	TO MATCH PAINT #4			

No.	Revision	By	Date
2	Revision #1	RL	7-14-92

Key Notes

02000 SITE

2.1 Earth subgrade
2.2 Compacted granular fill
2.3 Drainage gravel
2.4 Drain tile
2.5 Steel pipe bollard

03000 Concrete

3.1 Conc. footing
3.2 Conc. foundation wall
3.3 Conc. slab on grade
3.4 4" conc. topping slab
3.5 Conc. walk
3.6 Conc. curb
3.7 Formed and stained conc. surface
3.8 Smooth conc. finish
3.9 Conc. wall

05000 Steel

5.1 Reinf. Std. Bar
5.2 6x6x10 welded wire fabric
5.3 Steel angle
5.4 Steel plate
5.5 Steel channel
5.6 4x6 stl. tube column
5.7 4x4 stl. tube column
5.8 1/2" RC resilient channel
5.9 16ga. galv. sheet metal
5.10 1 1/2" mtl. roofing deck
5.11 C6x13 guardrail
5.12 1 1/2" mtl. Z channel
5.13 7/8" hat channel
5.14 Painted mtl eave vent (cont.)

06000 Wood

6.1 2x4
6.2 2x6
6.3 2x8
6.4 Pre-manufactured wood truss
6.5 4x14 wood beam
6.6 3/4" sheathing
6.7 Sawn wood shingles
6.8 Wood base
6.9 1x wood trim kerfed
6.10 2x wood trim
6.11 1x4 T&G wood siding w/V groove
6.12 Rough sawn 3/4" plwd. 4"O.C.
6.13 3/4" exterior plywood
6.14 2x10 facia plate
6.15 4x4
6.16 Batten board
6.17 Wood blocking
6.18 Wood trim

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7.1 G.I. flashing
7.2 Sealant
7.3 3 1/2" batt insulation
7.4 5 1/5" Fiberglass batt insul.
7.5 7 1/2" Fiberglass batt insul.
7.6 12" blown-in insulation
7.7 1 1/2" rigid insul.
7.8 Tapered rigid roof insulation
7.9 2" PVC weep w/screen on inside face
7.10 Single ply Hypalon roofing membrane
7.11 Termination bar
7.12 Pre-finished rain gutter
7.13 Rain leader
7.14 Building paper
7.15 Vapor barrier
7.16 Moisture barrier

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8.1 Metal security door
8.2 HM frame
8.3 Wood frame
8.4 Clad wood double hung window w/screen
8.5 Clad wood fixed window
8.6 Fixed wood window
8.7 1" insulated glass (clear)
8.8 1" insulated glass (tinted)
8.9 1/4" clear glass
8.10 Alum. threshold
8.11 Alum. door

09000 Finishes

9.1 5/8" Gypsum Wallboard (gyp.bd.)
9.2 5/8" WP Gypsum wallboard
9.3 Vinyl composition tile (VCT)

10000 Specialties

10.1 Toilet tissue dispenser
10.2 Soap dispenser
10.3 Paper towel dispenser
10.4 Grab Bar
10.5 Mirror
10.6 Feminine napkin receptacle
10.7 Mop service sink
10.8 Mop hanger
10.9 Drinking fountain
10.10 Lockers
10.11 Fire extinguisher & Cabinet
10.12 Bug screen

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11.1 Toll computer (NIC)
11.2 Toll modem (NIC)
11.3 Toll P.C. (NIC)
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11.6 Undercounter refrigerator
11.7 Vending Machines (NIC)

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12.3 Plastic laminate counter top
12.4 Plastic laminate counter
12.5 bulletin board

15000 Mechanical

15.1 Pre-finished metal louver
15.2 Electric Water heater
15.3 Toilet
15.4 Lavatory
15.5 Kitchen sink
15.6 Heat pump condenser unit
15.7 Heat pump fan unit
15.8 perimeter duct
15.9 Feeder duct
15.10 Rooftop Mech. unit
15.11 Electrical space heater

16000 Electrical

16.1 Emergency Generator
16.2 Light fixture
16.3 Traffic light
16.4 Lighting panels

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TEL. (703) 684-2700

Richmond Metropolitan Authority

PROJECT NO: 14287
DATE:
DRAWN BY: RL
CHECKED BY:
CHECKED BY:
REVISED DATE:

BOULEVARD BRIDGE TOLL PLAZA BUILDING

DRAWING TITLE:

REFLECTED CEILING PLAN, INTERIOR ELEVATIONS

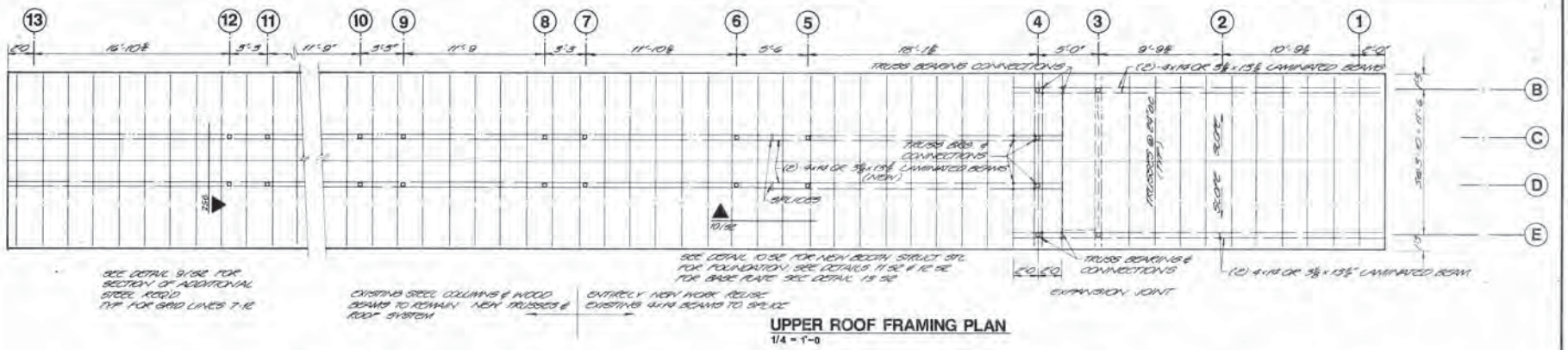
CONTRACT NO. 17B

36.10

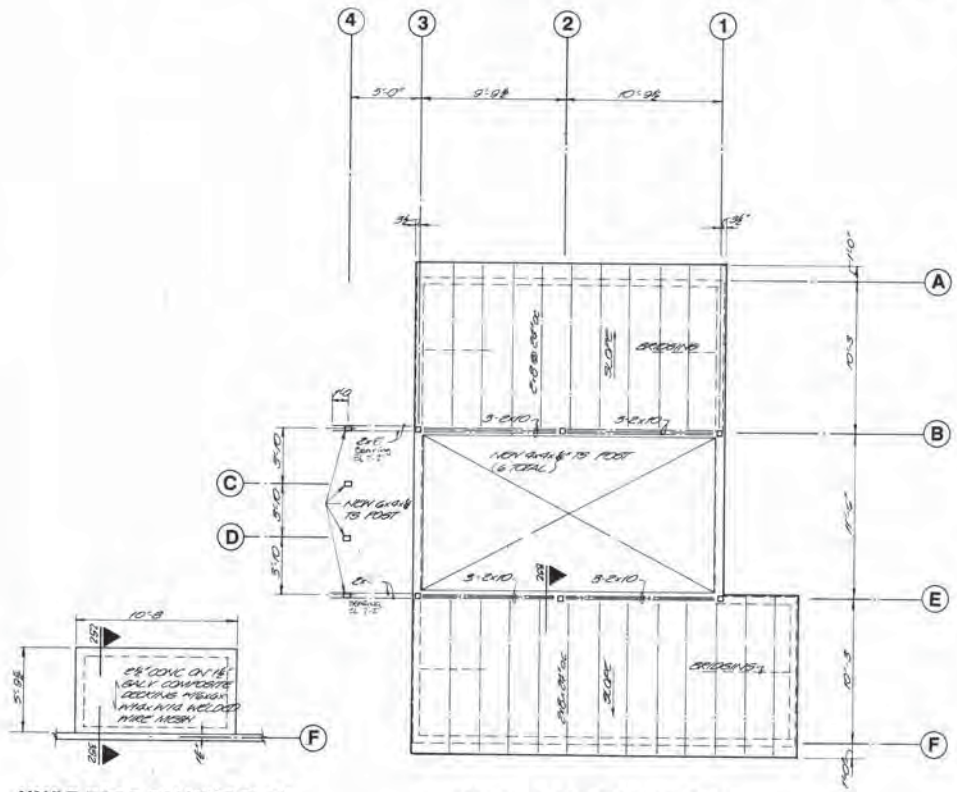
DRAWING NUMBER:

A-8

RECORD DRAWING

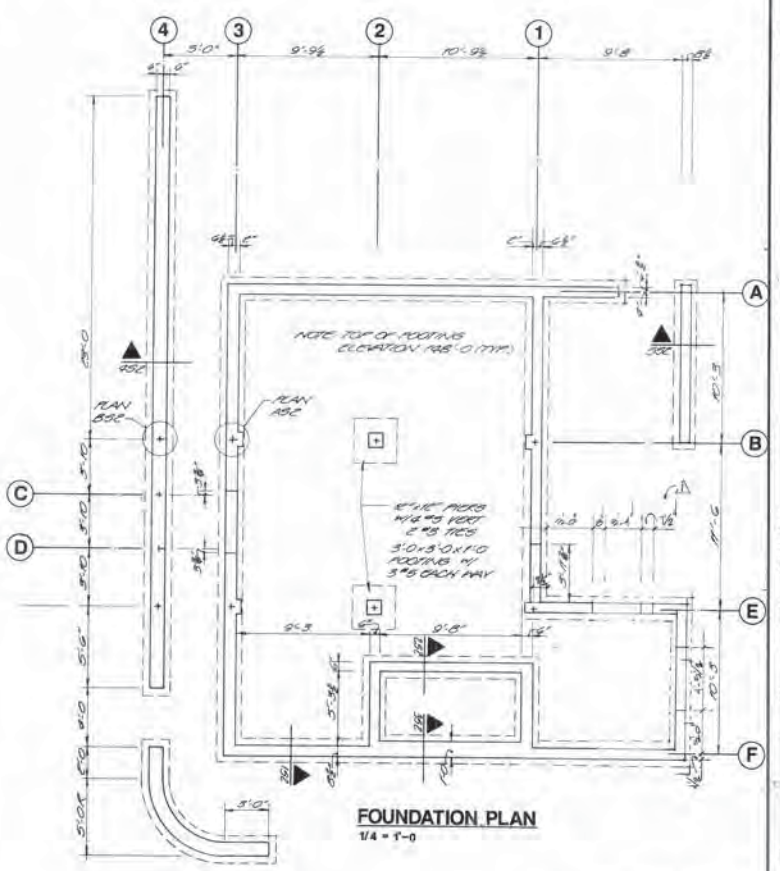


UPPER ROOF FRAMING PLAN
1/4 = 1'-0



VAULT ROOF FRAMING PLAN
1/4 = 1'-0

LOWER ROOF FRAMING PLAN
1/4 = 1'-0



FOUNDATION PLAN
1/4 = 1'-0

No.	Revision	By	Date
1	Addendum #2	PL	4-23-12

RECORD DRAWING

CARY C. GOODMAN No. 6685 ARCHITECT
COMMONWEALTH OF VIRGINIA

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HOWARD NEEDLES TAMMEN & BERGENDOFF ARCHITECTS ENGINEERS PLANNERS
99 CANAL CENTER PLAZA ALEXANDRIA, VIRGINIA 22314 TEL: (703) 684-2700

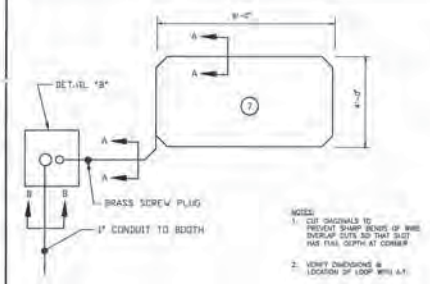
Richmond Metropolitan Authority

PROJECT NO:
DATE:
DRAWN BY: CG
CHECKED BY:
CHECKED BY:
REVISED DATE:

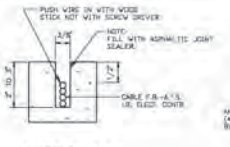
BOULEVARD BRIDGE TOLL PLAZA BUILDING

DRAWING TITLE:
FRAMING PLANS

CONTRACT NO. 17B
36.12
DRAWING NUMBER:
S-1



SLOT PLAN - VEHICLE DECTECTION LOOP
NORTHBOUND AS SHOWN SOUTHBOUND OPP. HAND
N.T.S.



SECTION AA
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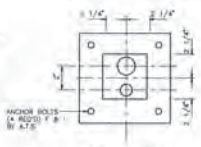
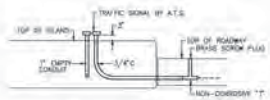


DETAIL 'B'
N.T.S.



SECTION BB
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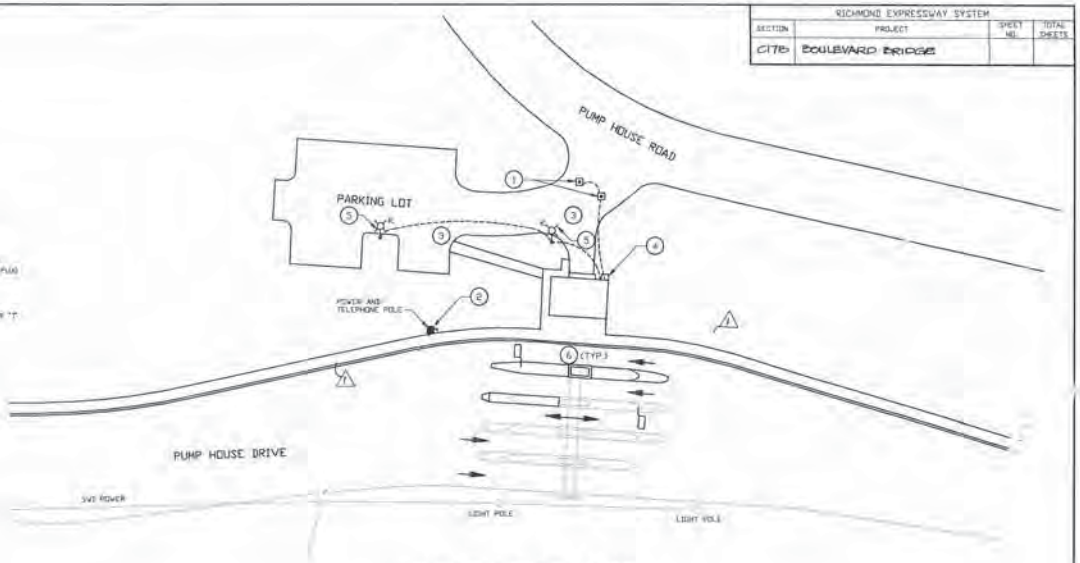
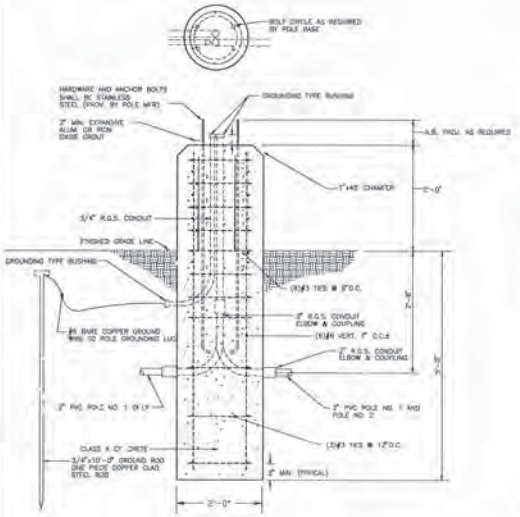
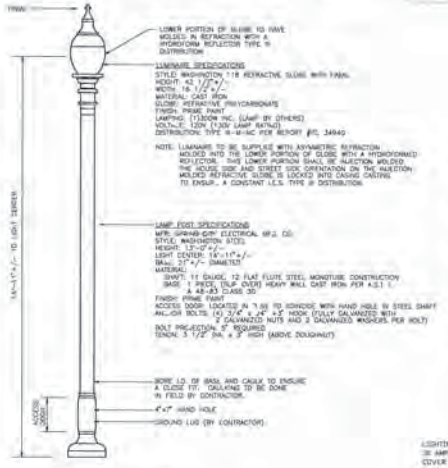


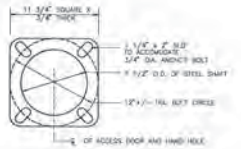
ELECTRICAL SITE PLAN
SCALE: 1"=30'-0"



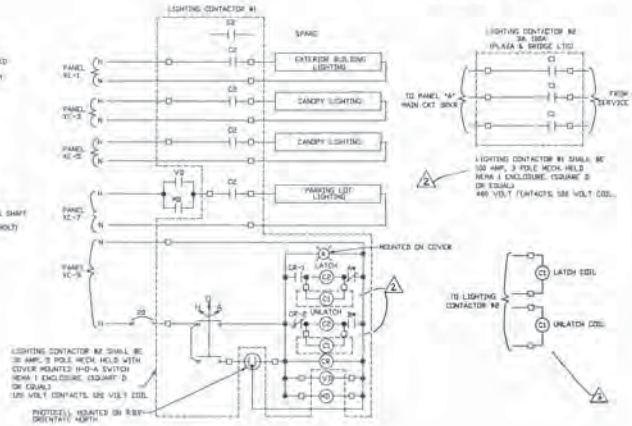
NEW POLE FOUNDATION DETAIL
N.T.S.



NEW POLE ELEVATION
N.T.S.



BASE PLATE DETAIL
N.T.S.



LIGHTING CONTROL SCHEMATIC - SITE
SCALE: N.T.S.
LOCATED IN ROOM A108

KEYED NOTES:

1. EMBEDDED VEHICLE DETECTOR ON CENTER LINE OF ENTRANCE AND EXIT LANES. SEE DETAIL ON THIS SHEET.
2. LIGHT AND POWER POLES. RELOCATED AS PART OF ROADWAY WORK.
3. CARE MUST BE TAKEN NOT TO DAMAGE EXISTING TREES. RUN ALL CONDUIT UNDER ALREADY DISTURBED CONSTRUCTION AREA UNDER NEW PAVEMENT.
4. SEE POWER PLAN FOR UNDERGROUND CONDUITS IN THIS AREA.
5. AREA LIGHTING POLE. SEE DETAILS ON THIS SHEET.
6. CONDUIT AND WIRING FOR AUTOMATIC TOLL SYSTEM (A.T.S.) CONTROL AND POWER INSIDE EACH BOOTH IS NOT SHOWN.
7. LOOP DETECTOR CABLE SUPPLIED BY A.T.S. VENDOR AND INSTALLED BY CONTRACTOR. ALL OTHER WIRE AND CONDUIT FURNISHED BY CONTRACTOR. SEE "SLOT PLAN DETAIL" THIS SHEET.

RECORD DRAWING

	By	Date				
Designed	HCR	3-17-92	3	CLARIFY NOTE & DETAILS	HCR	2-2-78
Drawn	BSA	3-17-92	2	Revision # 1	DL	7-14-92
Checked			1	Addendum #2	EL	4-23-92
Approved			No.	Revision	By	Date

RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
CITE>	BOULEVARD BRIDGE		

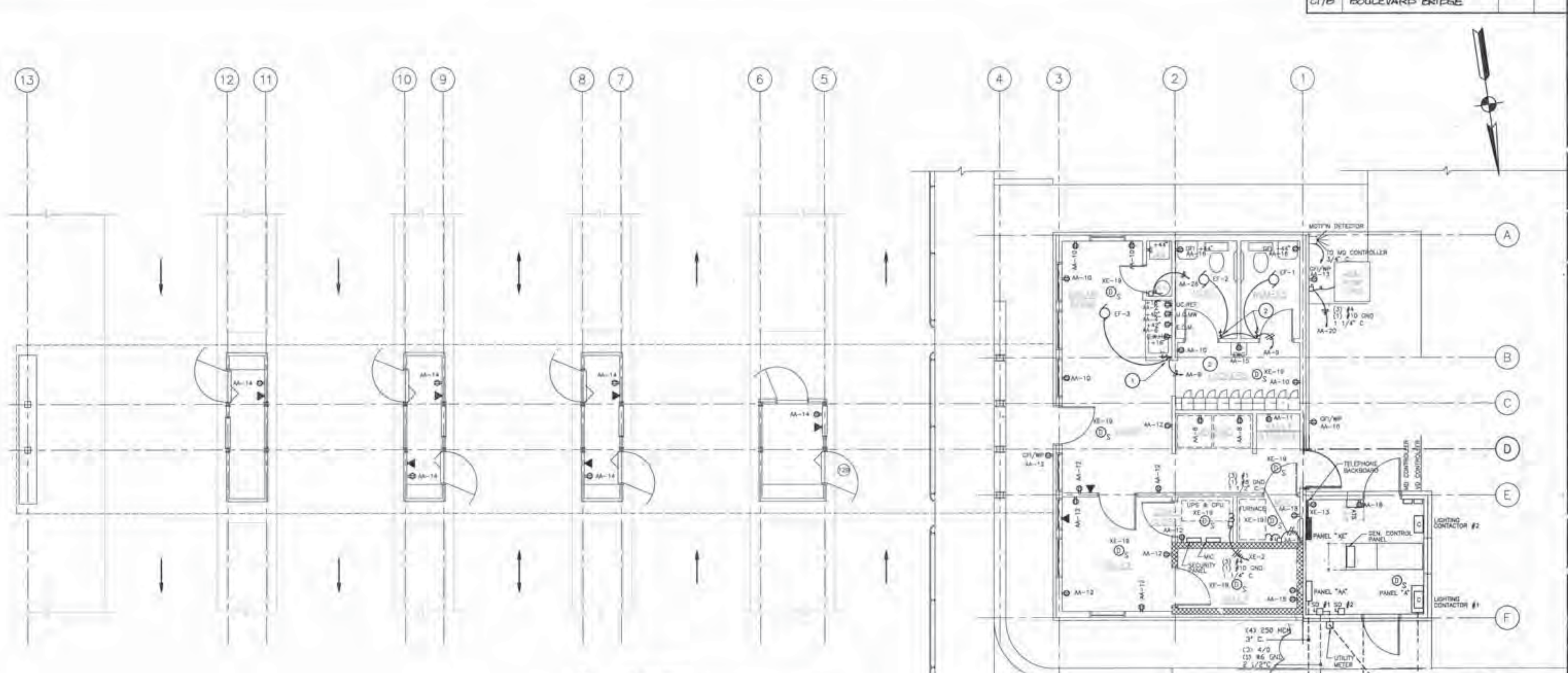
CONTRACT NO. 17B
36.21

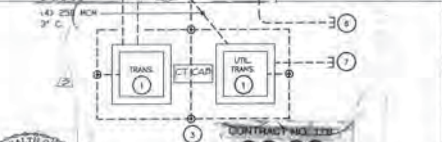
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
BLVD. BRIDGE TOLL PLAZA
ELECTRICAL SITE PLAN

HOWARD NEEDLES TAMMEN & BERGENDOFF
Architects Engineers Planners
ALEXANDRIA, VA.
HNTB

Scale:	Date	Contract No.	Sheet:
1"=30'(1/2)	2-92	C-17B	E1 of

RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
C17B	BOULEVARD BRIDGE		





KEYED NOTES:

1. BOND TRANSFORMER HOUSING TO NEUTRAL AND GROUND PER NEC 250-5.
2. NOT USED ON THIS SHEET.
3. SUPPLEMENTAL GROUND ELECTRODE: (4) 3/4"x 10'-0" COPPER WELD GROUND ROD WITH GROUND LOOP 12" ± AROUND TRANSFORMER PADS. CONDUCTOR IS #1/0 AWG SD COPPER. CONNECTIONS ARE BY THERMIC WELD PROCESS. INSTALL 18" MIN. BELOW GRADE. BOND GROUND BAR TO COLD WATER PIPE (AHEAD OF WATER METER IN JANITORS CLOSET) AND TO SUPPLEMENTAL GROUND ELECTRODE SYSTEM.
4. NOT USED ON THIS SHEET.
5. NOT USED ON THIS SHEET.
6. (3) 3" RGS CONDUITS, STUB AT 10'-0" OUTSIDE BUILDING LINE (FOR FUTURE USE FOR ROAD AND BRIDGE LIGHTING CIRCUITS).
7. 4" RGS CONDUIT. STUB AT 10'-0" FROM EDGE OF TRANSFORMER PAD. (FOR UTILITY PRIMARY FEEDER. COORDINATE EXACT REQUIREMENTS INCLUDING PAD CONSTRUCTION DETAILS WITH UTILITY)
8. UPS AND COMPUTER EQUIPMENT BY OWNER. EXACT REQUIREMENTS INCLUDING MAINTENANCE BYPASS EQUIPMENT TO BE DETERMINED LATER.
9. NOT USED ON THIS SHEET.
10. NOT USED ON THIS SHEET.
11. 1P-20A HP RATED TIMER SWITCH. (0-120 MIN. RANGE)
12. 1P-20A HP RATED MANUAL STARTER. (TOGGLE SWITCH TYPE)

KEYED NOTES: VOID

1. 1P-20A HP RATED TIMER SWITCH. (0-120 MIN. RANGE)
2. 1P-20A HP RATED MANUAL STARTER. (TOGGLE SWITCH TYPE)
3. (3) 3/4"x 10'-0" COPPER WELD GROUND ROD, SPACED 15'-0" APART ON AN EQUILATERAL TRIANGLE. CONDUCTOR IS #4 AWG SD COPPER. CONNECTIONS ARE THERMIC WELD PROCESS. INSTALL 18" MIN. BELOW GRADE. GENERATOR GROUND IS A SEPARATELY DERIVED SYSTEM AND SHALL NOT BE CONNECTED TO SERVICE GROUND.
4. (3) 3" RGS CONDUITS, STUB AT 10'-0" OUTSIDE BUILDING LINE (FOR FUTURE USE FOR ROAD AND BRIDGE LIGHTING CIRCUITS).
5. 4" PVC CONDUIT. STUB AT 10'-0" FROM EDGE OF TRANSFORMER PAD. (FOR UTILITY PRIMARY FEEDER. COORDINATE EXACT REQUIREMENTS INCLUDING PAD CONSTRUCTION DETAILS WITH UTILITY)

	By	Date	No.	Revision	By	Date
Designed	HCR		3	CLARIFY NOTES & DETAILS	HCR/DL	2-2-93
Drawn			2	Revision #1	DL	7-14-92
Checked			1	Addendum #2	DL	4-23-92
Approved			No.	Revision	By	Date

COMMONWEALTH OF VIRGINIA PROFESSIONAL ENGINEER

RECORD DRAWING

CONTRACT NO. 178
36.23

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

BLVD. BRIDGE TOLL PLAZA

POWER PLAN

HOWARD NEEDLES TAMMEN & BERGENDOFF — Architects, Engineers, Planners — ALEXANDRIA, VA — HNTB

Scale:	Date:	Contract No.:	Sheet:
1/4"=1'-0"	2-92	C-178	E3 of

RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
C17B	BOULEVARD BRIDGE		

LIGHTING FIXTURE SCHEDULE

TYPE: CODE ON DWG

MTG: G — GROUND; P — POLE; R — RECESSED; RP — RECESSED PLASTER; S — SURFACE; U — UNIVERSAL; W — WALL; SUSP — SUSPENDED; * — SEE REMARKS

TYPE: EL — ELECTROLUMINESCENT; F — F40 FLUORESCENT-STRAIGHT; FU — F40 FLUORESCENT-U SHAPE; FO — OCTRON FLUO.; FOC — OCT. FL./CURVALUME; CF — COMPACT FLUORESCENT; I — INCANDESCENT; M — MERCURY VAPOR; Q — QUARTZ; MH — METAL HALIDE; TH — TUNGSTEN HALOGEN; HPS — HIGH PRESSURE SODIUM

BULB: RS — RAPID START; TS — TRIGGER START; CW — COOLWHITE STD; DL — DAY LIGHT; DW — DELUXE WHITE; O1 — OCTRON 31K; O2 — OCTRON 41K; O3 — OCTRON 30K; WW — WARM WHITE STANDARD; * — SEE REMARKS

LENS–DIFFUSER: F — FRESNEL; G — GLASS; T — TEMPERED; AC — ACRYLIC (VIRGIN); FW — FLAT MILK WHITE; O — OPAL; PR — PRISMATIC; POL — POLYCARBONATE; ASY — ASYMMETRIC

REFL: A — PAINTED ALUM.; AA — ANODIZED ALUM.; AL — ALZAK ALUM.; PS — PAINTED STEEL; SA — SPECULAR ALUM.; SSA — SEMI SPECULAR ALUM.

BAFF: BG — BLACK MULTI-GROOVE; PB — PAINTED MATTE BLACK; PAR — PARABOLIC LOUVER; PW — PAINTED WHITE; * — SEE REMARKS

DOORS SHALL BE HINGED AND COMPLETE W/LATCH AND LIGHT SEAL UNLESS OTHERWISE NOTED.

MATERIAL: A — ALUMINUM; S — STEEL; AA — ANODIZED ALUMINUM; CA — CAST ALUM; EA — EXTRUDED ALUM.; PB — PAINTED MATTE BLACK; SS — STAINLESS STEEL; POR — PORCELAIN

FINISH: P — PAINTED; AA — ANODIZED ALUM.; PB — PAINTED MATTE BLACK; PP — POLYESTER POWDER; PW — PAINTED MATTE WHITE; PBR — PAINTED DARK BRONZE; PMB — PAINTED MEDIUM BRONZE; * — SEE REMARKS

SM — STND. MAG; LT — LOW TEMP. (-20° F); ESM — ENER. SAV MAGNETIC; E — ELECTRONIC; TBM — TB MAG.; TBE — TB ELEC.; HPF — HIGH POWER FACTOR

NOTES:

TYPE	MTG	LAMP TYPE	LAMP QUAN	LAMP BULB	LAMP NOM WATT	NOM FIXT DIM.	BEAM CONTROL LENS	BEAM CONTROL DIFF	BEAM CONTROL THICK	BEAM CONTROL REFL	BEAM CONTROL BAFF	DOOR MAT	DOOR FIN	TRIM MAT	TRIM FIN	BODY MAT	BODY FIN	AUXILIARY EQUIPMENT BALLAST	AUXILIARY EQUIPMENT VOLT	REFERENCE MANUFACTURER	REFERENCE CAT. NO./SERIES
A	S	F	2	CW	40	1'x4'	PR	AC	.1"	—	—	S	PW	S	PW	S	PW	ESM	120	KLP	ANB240
B	SUSP	F	2	CW	40	1'x4'	—	—	—	AA	—	—	—	A	PW	A	PW	ESM	120	LIGHTOLIER	CD11-3342
C	W	CF	2	—	13	6 1/2"x11"	—	—	—	PS	PW	—	—	S	PW	S	PW	—	120	LITECONTROL	W-ID-307213-BW
E	S	I	2	TS	20	8 3/4"x10 5/8"	—	—	—	—	—	—	—	A	A	A	—	—	120	McPHILBEN	50LW-8-G
F	R	CF	2	—	13	7 3/8"ø	—	—	—	AL	—	—	—	A	PW	A	—	SM	120	LIGHTOLIER	1800-2-13-BK
G	W	F	2	CW	20	1'x2'	PR	AC	—	—	—	—	—	S	PW	S	PW	—	120	KLP	CWBX-220-HPFH
H	R	MH	1	—	175	14"x14"	T	PR	.156"	—	—	A	PP	S	PP	S	PP	HPF	120	FAIL SAFE	408-MOG-120-83-ALP
HH	W	MH	1	—	175	17"x15"	PR	G	—	—	—	—	—	A	P	A	P	—	120	HOLOPHANE	W2K-175MH-BL-FU
J	S	FU	1	RS	40	12"x12"	PR	AC	.1"	—	—	—	—	A	P	A	P	—	120	AIRLIN	92240-SM
K	P	I	1	CW	130	—	—	—	—	—	—	—	—	ALKCOA		A	—	—	120	SPRING CITY	WASHINGTON 118
L	S	F	2	TS	20	12"x24"	—	—	—	—	—	—	—	S	P	S	P	—	120	ALKCO	—
M	S	MH	1	—	75	—	—	—	—	—	—	—	—	S	PP	S	PP	HPF	120	MIROFLECTOR	MIRO-T

PANEL SCHEDULE

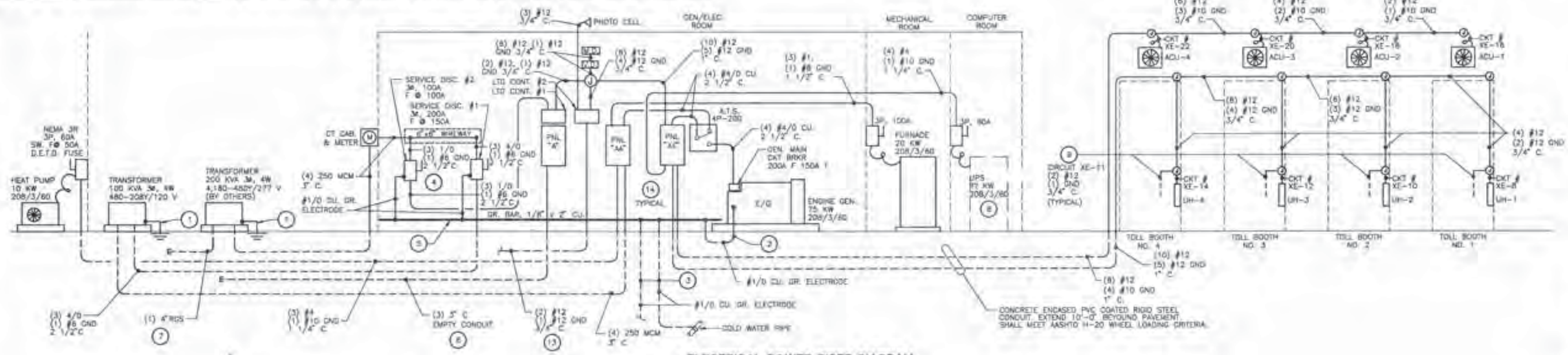
DESIGNATION: PANEL "AA" — LOCATION: GENERATOR ROOM — VOLTAGE: 208Y/120 VOLT — PHASE: 3 PHASE, 4 WIRE
MAINS: 225 AMP MAIN CKT BKR — BUS SIZE: 225 AMP — PANEL MOUNTING: SURFACE — ALL BREAKERS: 10,000 A.I.C. (MIN.)

CKT NO	LOAD DESCRIPTION	*	KVA	CKT BRKR AMPS	CKT BRKR POLE	KVA A	KVA B	KVA C	CKT BRKR AMPS	CKT BRKR POLE	KVA	*	LOAD DESCRIPTION	CKT NO
1	LTG-RESTROOMS & JANITOR		0.30	20	1	1.90	—	—	20	1	1.60		RECEPT-U.C. REFRIGERATOR	2
3	LTG-BREAK ROOM		0.35	20	1	—	1.95	—	20	1	1.60		RECEPT-MICROWAVE	4
5	LTG-VAULT & OFFICE		0.60	20	1	—	—	2.20	20	1	1.80		RECEPT-COFFEE MAKER	6
7	LTG-LOBBY		0.20	20	1	1.80	—	—	20	1	1.80		RECEPT-VENDING MACHINES	8
9	EF1, EF2, EF3		1.00	20	1	—	2.20	—	20	1	1.20		RECEPT-BREAK & LOCKER ROOMS	10
11	RECEPT-VAULT STORAGE		0.20	20	1	—	—	1.40	20	1	1.20		RECEPT-OFFICE & LOBBY	12
13	RECEPT-OUTDOOR		0.20	20	1	1.00	—	—	20	1	0.80		RECEPT-TOLLBOOTHS	14
15	EWC		1.60	20	1	—	2.00	—	20	1	0.40		RECEPT-TOILET ROOMS	16
17	SPARE			20	1	—	—	0.40	20	1	0.40		RECEPT-VAULT	18
19	FURNACE		6.70	20	3	10.20	—	—	40	3	3.50		HEAT PUMP	20
	—		6.70	—	—	—	10.20	—	—	—	3.50		—	
	—		6.70	—	—	—	—	10.20	—	—	3.50		—	
25	ATS - NORMAL FEED		14.0	150	3	14.00	—	—	25	2	1.00		WATER HEATER	26
	—		14.0	—	—	—	14.00	—	—	—	1.00			
	—		14.0	—	—	—	—	14.00	20	1			SPARE	30
TOTAL CONNECTED LOAD:						28.90	30.35	28.20	TOTAL = 87.45 KVA					

PANEL SCHEDULE

DESIGNATION: PANEL "XE" — LOCATION: GENERATOR ROOM — VOLTAGE: 208Y/120 VOLT — PHASE: 3 PHASE, 4 WIRE
MAINS: 150 AMP MAIN CKT BKR — BUS SIZE: 225 AMP — PANEL MOUNTING: SURFACE — ALL BREAKERS: 10,000 A.I.C. (MIN.)

CKT NO	LOAD DESCRIPTION	*	KVA	CKT BRKR AMPS	CKT BRKR POLE	KVA A	KVA B	KVA C	CKT BRKR AMPS	CKT BRKR POLE	KVA	*	LOAD DESCRIPTION	CKT NO
1	LTG - BLDG EXTERIOR		0.80	20	1	6.80	—	—	60	3	6.00		UPS	2
3	LTG - CANOPY		2.0	20	1	—	8.00	—	—	—	6.00		—	
5	LTG - CANOPY		2.0	20	1	—	—	8.00	—	—	6.00		—	
7	LTG - PARKING LOT		0.60	20	1	1.35	—	—	20	1	0.75		UNIT HEATER UH-1	8
9	LIGHTING CONTACTOR		0.50	20	1	—	1.25	—	20	1	0.75		UNIT HEATER UH-2	10
11	LTG/RECEPT BOOTHS 1-4		1.24	20	1	—	—	1.99	20	1	0.75		UNIT HEATER UH-3	12
13	TELEPHONE BACKBOARD		0.20	20	1	.95	—	—	20	1	0.75		UNIT HEATER UH-4	14
15	MASTER INTERCOM STATION		0.20	20	1	—	1.82	—	20	1	1.62		AIR CONDITIONER ACU-1	16
17	SECURITY PANEL		0.50	20	1	—	—	2.12	20	1	1.62		AIR CONDITIONER ACU-2	18
19	SMOKE DETECTORS		0.20	20	1	1.82	—	—	20	1	1.62		AIR CONDITIONER ACU-3	20
21	BUILDING LIGHTS		0.20	20	1	—	1.82	—	20	1	1.62		AIR CONDITIONER ACU-4	22
23	SPARE GENERATOR			20	1	—	—	x	20	1			SPARE	24
25	SPARE			20	1		—	—	20	1			SPARE	26
27	SPARE			20	1	—		—	20	1			SPARE	28
29	SPARE			20	1	—	—		20	1			SPARE	30
TOTAL CONNECTED LOAD:						10.83	12.89	12.11	TOTAL = 35.92 KVA					



ELECTRICAL POWER RISER DIAGRAM
SCALE: N.T.S.

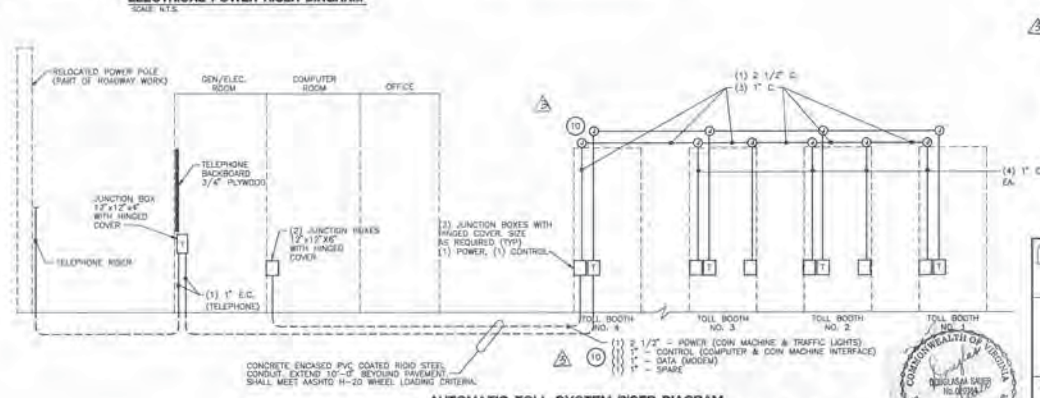
KEYED NOTES:

1. BOND TRANSFORMER HOUSING TO NEUTRAL AND GROUND PER NEC 250-5.
2. GENERATOR POWER IS SEPARTATELY DERIVED SYSTEM. GROUND PER NEC 250-26.
3. SUPPLEMENTAL GROUND ELECTRODE: (4) 3/4"x 10'-0" COPPER WELD GROUND ROD WITH GROUND LOOP 12" ± AROUND TRANSFORMER PADS. CONDUCTOR IS #1/0 AWG SD COPPER. CONNECTIONS ARE BY THERMIC WELD PROCESS. INSTALL 18" MIN. BELOW GRADE. BOND GROUND BAR TO COLD WATER PIPE (AHEAD OF WATER METER IN JANITORS CLOSET) AND TO SUPPLEMENTAL GROUND ELECTRODE SYSTEM.
4. GROUND SERVICE EQUIPMENT PER NEC 250-26.
5. MOUNT GROUND BAR 12" A.F.F. ALONG EAST AND NORTH WALL, WITH EXPANSION ANCHORS, 1" SPACER AND 3/8" CAP SCREWS, SPACED AT 2'-0" O.C. GROUND ALL EQUIPMENT HOUSING IN GEN/ELEC. ROOM BY BONDING TO GROUND BAR, PER NEC 250.
6. (3) 3" RGS CONDUITS, STUB AT 10'-0" OUTSIDE BUILDING LINE. (FOR FUTURE USE FOR ROAD AND BRIDGE LIGHTING CIRCUITS).
7. 4" RGS CONDUIT. STUB AT 10'-0" FROM EDGE OF TRANSFORMER PAD. (TRANSFORMER AND PRIMARY FEEDER BY OTHERS. CONCRETE PAD AND SECONDARY SERVICE AND CONNECTIONS PART OF THIS CONTRACT).
8. COMPUTER EQUIPMENT BY OWNER. EXACT REQUIREMENTS INCLUDING MAINTENANCE BYPASS EQUIPMENT TO BE DETERMINED LATER.
9. TO BOOTH INTERIOR LIGHTS AND RECEPTACLES.
10. USE SEPARATE RACEWAY FOR EACH FUNCTION (CONDUIT & JUNCTION BOX). COLOR CODE JUNCTION BOXES AS FOLLOWS:
    - TELEPHONE - BLUE
    - POWER - RED
    - CONTROL - GREEN
    - DATA - YELLOW
    - SPARE - NONE
11. NOT USED ON THIS SHEET.
12. NOT USED ON THIS SHEET.
13. CIRCUIT XE-7 TO PARKING LOT LIGHTS.
14. BRANCH CIRCUIT WIRING AND CONDUITS WITHIN BUILDING ARE NOT SHOWN.

PANEL SCHEDULE

DESIGNATION: PANEL "A" — LOCATION: GENERATOR ROOM — VOLTAGE: 480Y/277 VOLT — PHASE: 3 PHASE, 4 WIRE
MAINS: 100 AMP MAIN CKT BKR — BUS SIZE: 100 AMP — PANEL MOUNTING: SURFACE — ALL BREAKERS: 35,000 A.I.C. (MIN.)

CKT NO	LOAD DESCRIPTION	*	KVA	CKT BRKR AMPS	CKT BRKR POLE	KVA A	KVA B	KVA C	CKT BRKR AMPS	CKT BRKR POLE	KVA	*	LOAD DESCRIPTION	CKT NO
1	TOLL PLAZA LIGHTING		1.50	20	1	2.80	—	—	20	1	1.3		BRIDGE LIGHTING	2
3	TOLL PLAZA LIGHTING		1.50	20	1	—	2.80	—	20	1	1.3		BRIDGE LIGHTING	4
5	TOLL PLAZA LIGHTING		1.50	20	1	—	—	2.80	20	1	1.3		BRIDGE LIGHTING	6
7	SPARE		—	20	1	0.00	—	—	20	1	—		SPARE	8
9	—		—	20	1	—	0.00	—	20	1	—		—	10
11	—		—	20	1	—	—	0.00	20	1	—		—	12
TOTAL CONNECTED LOAD:						2.80	2.80	2.80	TOTAL = 8.40 KVA					



AUTOMATIC TOLL SYSTEM RISER DIAGRAM
TELEPHONE SYSTEM RISER DIAGRAM
SCALE: N.T.S.

	By	Date	No.	Revision	By	Date
Designed	HCR	3-13-92	3	CLARIFY NOTES & DETAILS	HCR	2-2-93
Drawn	BSA	3-13-92	2	REVISION #1		7-14-92
Checked			1	Addendum #2	HCR	4-28-92
Approved						

CONTRACT NO. 17B
36.24

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
BLVD. BRIDGE TOLL PLAZA
SCHEDULES

HOWARD NEEDLES TAMMEN & BERGENDOFF — Architects, Engineers, Planners — ALEXANDRIA, VA. — HNTB

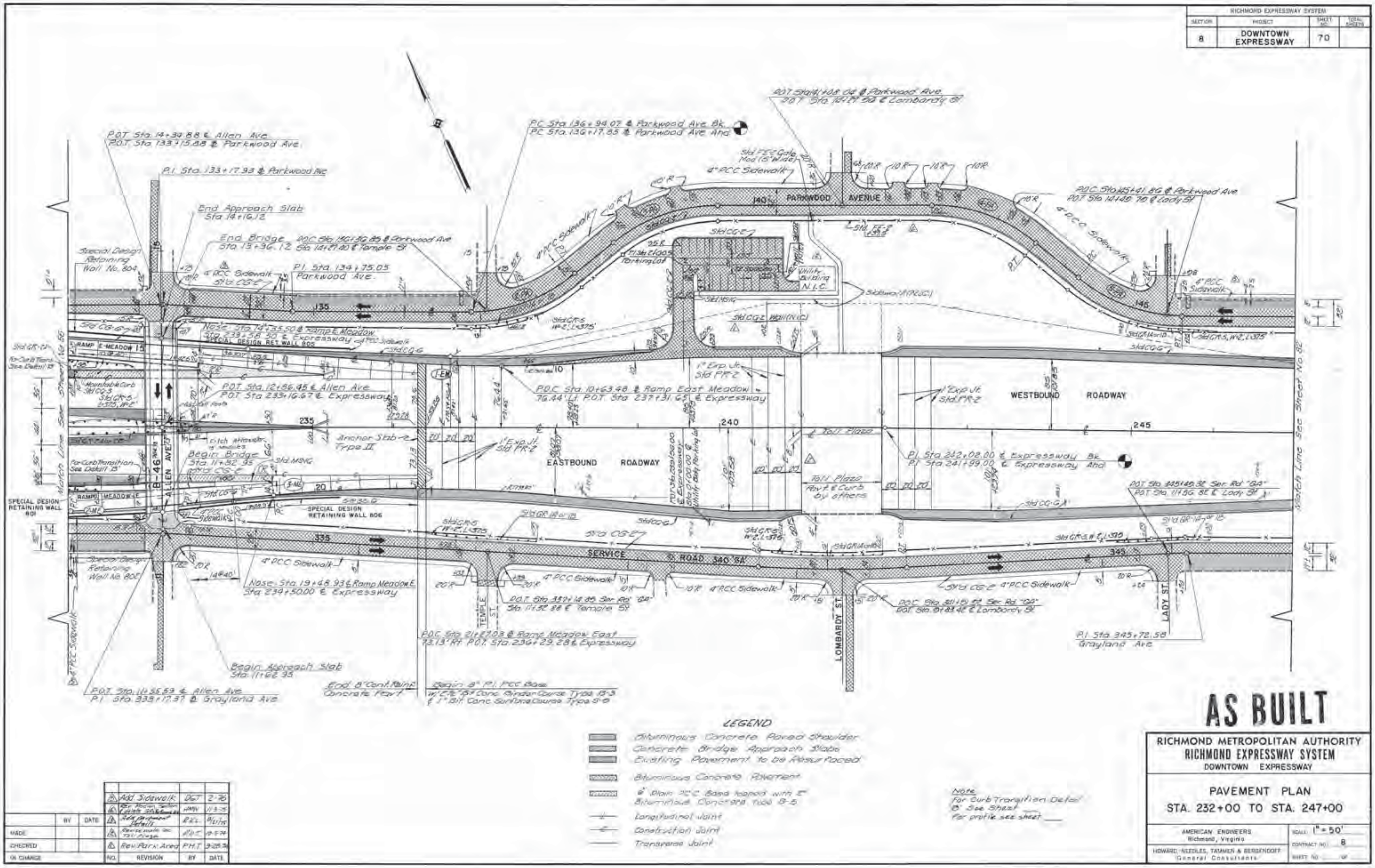
Scale:	Date:	Contract No.	Sheet:
NONE	2-92	C-17B	E4 of

RECORD DRAWING

DTE TOLL PLAZA

ORIGINAL PLANS

ADMINISTRATION BUILDING & TOLL PLAZA



LEGEND

- Bituminous Concrete Paved Shoulder
- Concrete Bridge Approach Slabs
- Existing Pavement to be Resurfaced
- Bituminous Concrete Pavement
- 8" Plain PCC Base topped with 2" Bituminous Concrete Type B-5
- Longitudinal Joint
- Construction Joint
- Transverse Joint

Note
For Curb Transition Detail B' See Sheet ___
For profile see sheet ___

NO.	REVISION	BY	DATE
5	Add Sidewalk	DGT	2-76
4	Rev. Median Section & Delete Std. ...	AMW	11-3-75
3	Add Pavement Details	R.K.L.	8/12/75
2	Revise walls to Toll Plaza	R.K.C.	10-5-74
1	Rev. Park. Area	P.H.T.	3-28-74

	BY	DATE
MADE		
CHECKED		
IN CHARGE		

AS BUILT

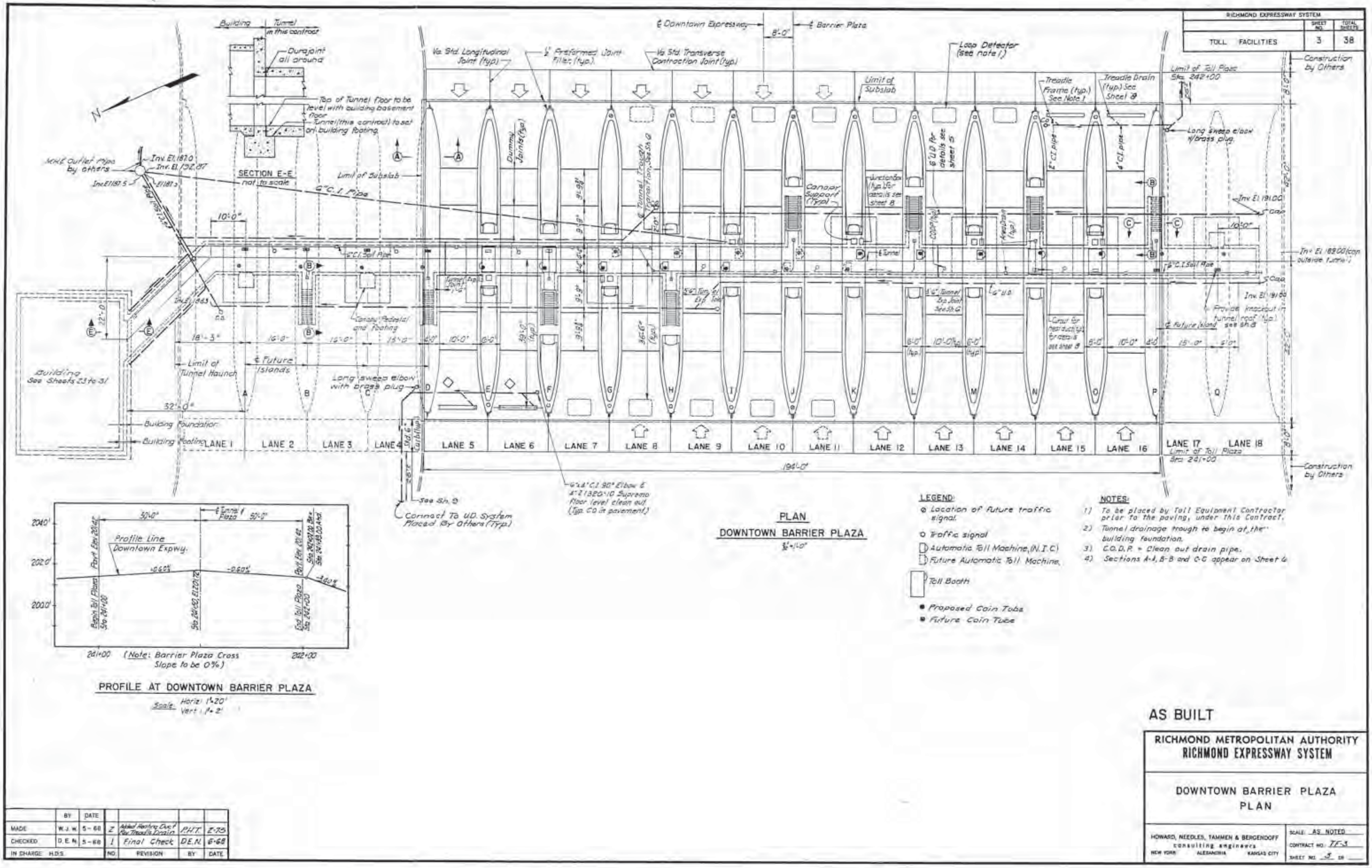
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
DOWNTOWN EXPRESSWAY

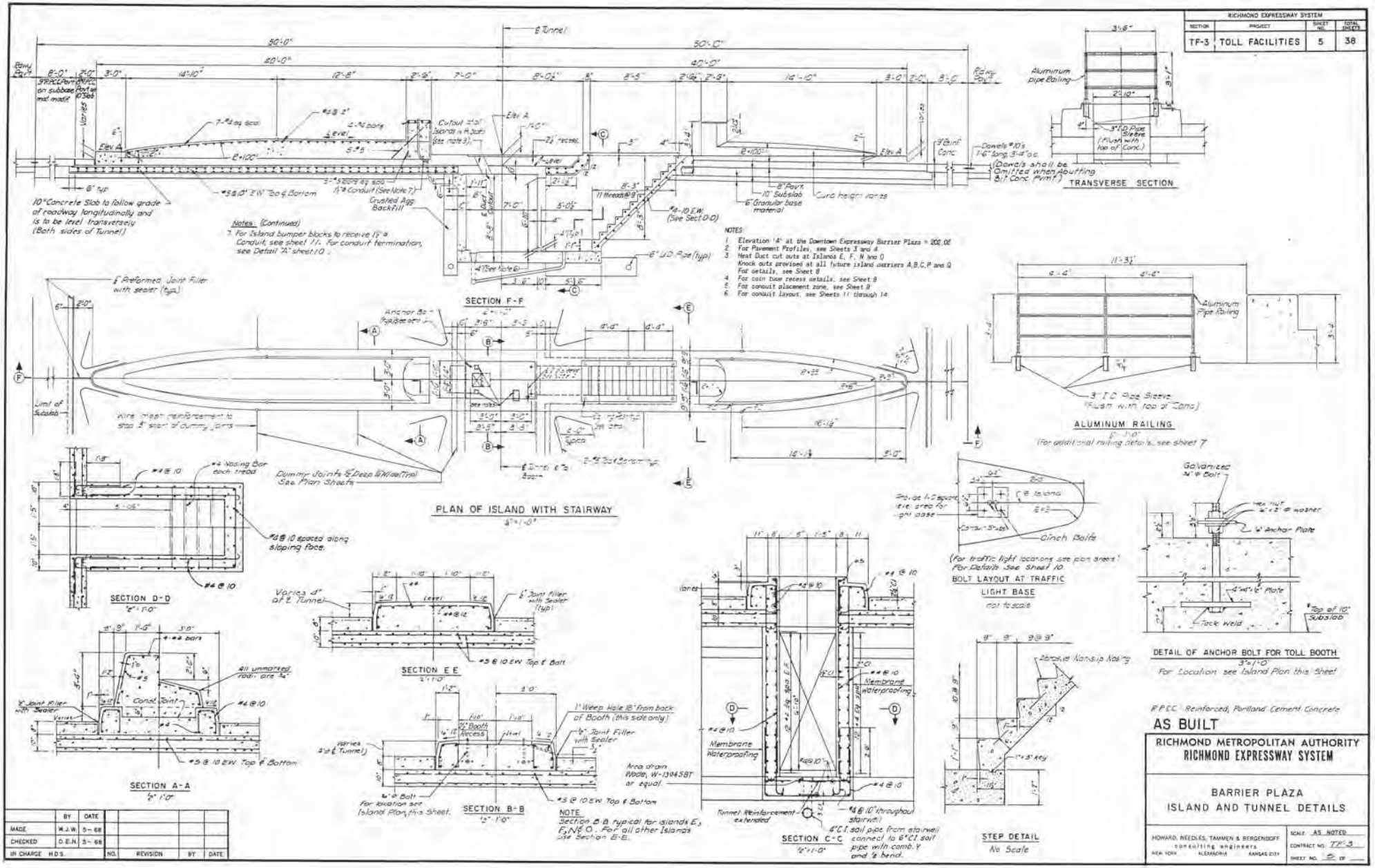
PAVEMENT PLAN
STA. 232+00 TO STA. 247+00

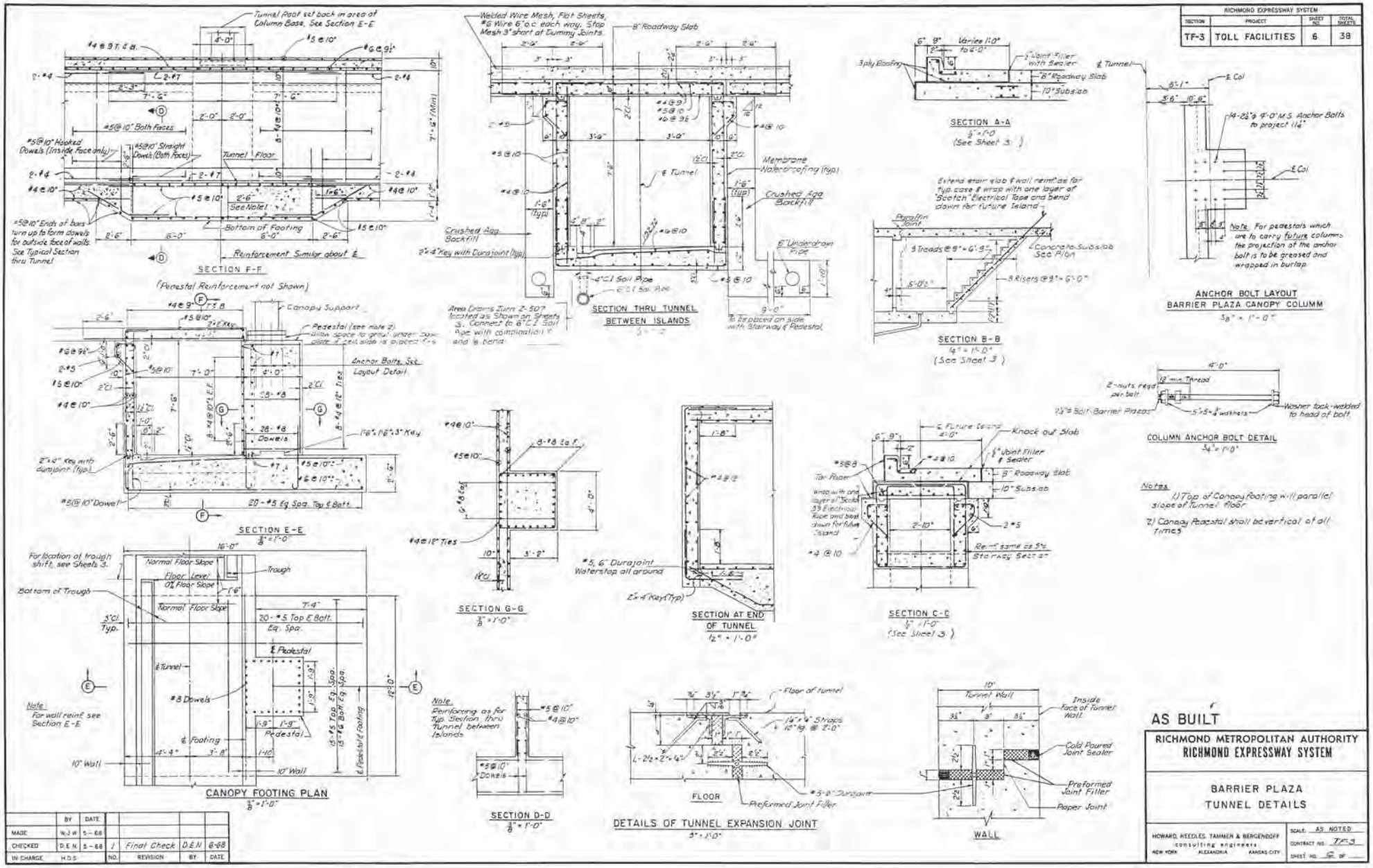
AMERICAN ENGINEERS
Richmond, Virginia

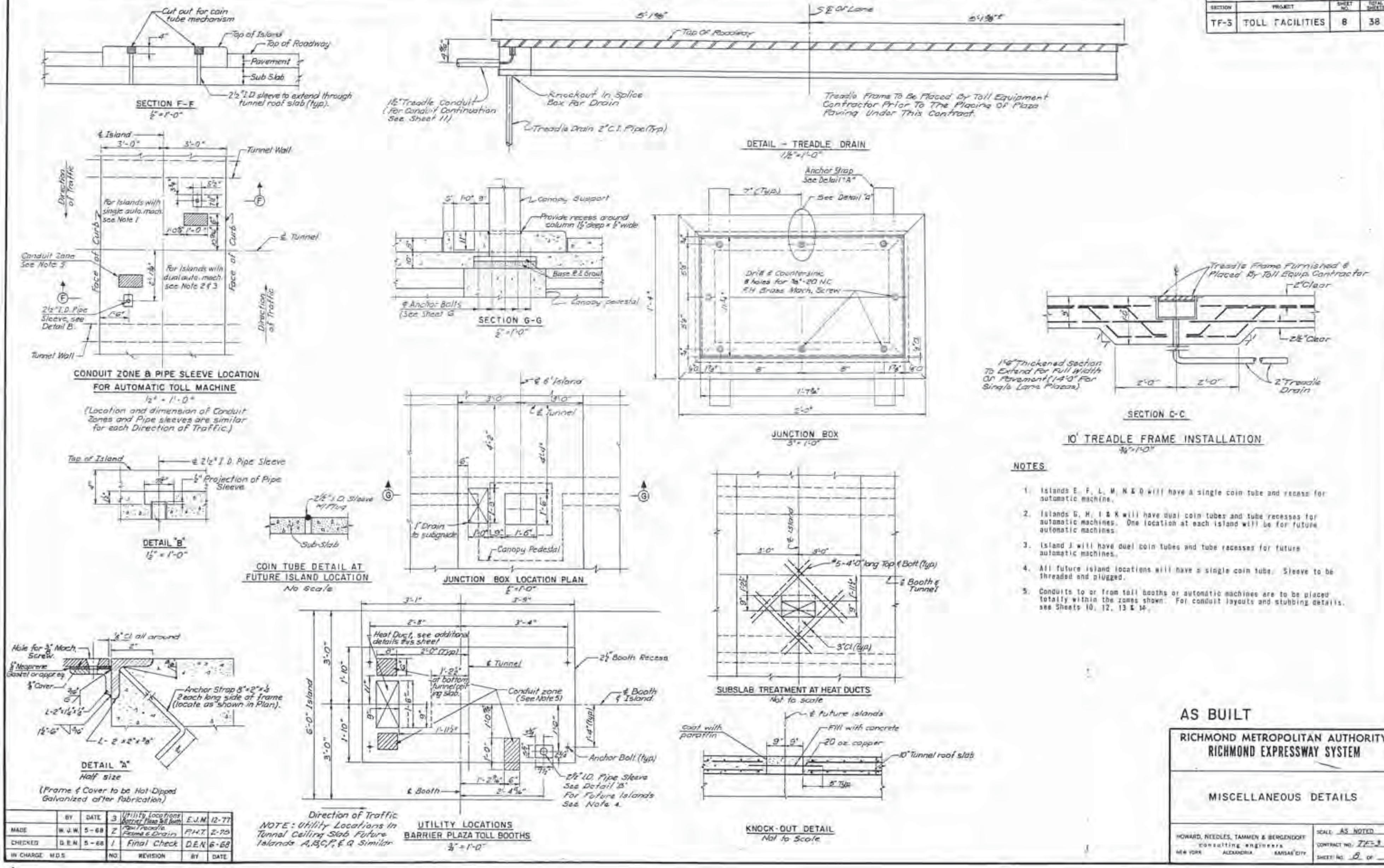
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
General Consultants

SCALE: 1" = 50'
CONTRACT NO. 8
SHEET NO. ___ OF ___


RICHMOND EXPRESSWAY SYSTEM
SHEET NO.
TOTAL SHEETS
TOLL FACILITIES
3
38
PLAN
DOWNTOWN BARRIER PLAZA
PROFILE AT DOWNTOWN BARRIER PLAZA
SECTION E-E
not to scale
LANE 1
LANE 2
LANE 3
LANE 4
LANE 5
LANE 6
LANE 7
LANE 8
LANE 9
LANE 10
LANE 11
LANE 12
LANE 13
LANE 14
LANE 15
LANE 16
LANE 17
LANE 18
194'-0"
Construction by Others
Building See Sheets 23 to 31
LEGEND:
Location of future traffic signal
Traffic signal
Automatic Toll Machine, (N.I.C.)
Future Automatic Toll Machine
Toll Booth
Proposed Coin Tube
Future Coin Tube
NOTES:
1) To be placed by Toll Equipment Contractor prior to the paving, under this Contract.
2) Tunnel drainage trough to begin at the building foundation.
3) C.O.D.P. = Clean out drain pipe.
4) Sections A-A, B-B and C-C appear on Sheet 6
(Note: Barrier Plaza Cross Slope to be 0%)
Profile Line Downtown Expwy.
AS BUILT
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
DOWNTOWN BARRIER PLAZA
PLAN
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY
SCALE: AS NOTED
CONTRACT NO. TF-3
MADE W.J.W. 5-68
CHECKED D.E.N. 5-68
IN CHARGE H.D.S.
2 Added Heating Duct For Treadle Drain P.H.T. 2-75
1 Final Check D.E.N. 6-68
NO. REVISION BY DATE


RICHMOND EXPRESSWAY SYSTEM
SECTION | PROJECT | SHEET NO. | TOTAL SHEETS
TF-3 | TOLL FACILITIES | 5 | 38
TRANSVERSE SECTION
ALUMINUM RAILING
SECTION F-F
PLAN OF ISLAND WITH STAIRWAY
SECTION D-D
SECTION E-E
SECTION A-A
SECTION B-B
SECTION C-C
BOLT LAYOUT AT TRAFFIC LIGHT BASE
not to scale
DETAIL OF ANCHOR BOLT FOR TOLL BOOTH
For Location see Island Plan this Sheet
STEP DETAIL
No Scale
R.P.E.C. Reinforced, Portland Cement Concrete
AS BUILT
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
BARRIER PLAZA
ISLAND AND TUNNEL DETAILS
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY
SCALE: AS NOTED
CONTRACT NO. TF-3
SHEET NO. 5 OF
MADE W.J.W. 5-68
CHECKED D.E.N. 5-68
IN CHARGE H.D.S.
NO. REVISION BY DATE


RICHMOND EXPRESSWAY SYSTEM
TF-3 TOLL FACILITIES 6 38
SECTION F-F
(Pedestal Reinforcement not Shown)
SECTION THRU TUNNEL BETWEEN ISLANDS
SECTION A-A
SECTION B-B
ANCHOR BOLT LAYOUT BARRIER PLAZA CANOPY COLUMN
COLUMN ANCHOR BOLT DETAIL
SECTION E-E
SECTION G-G
SECTION AT END OF TUNNEL
SECTION C-C
CANOPY FOOTING PLAN
SECTION D-D
DETAILS OF TUNNEL EXPANSION JOINT
WALL
AS BUILT
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
BARRIER PLAZA
TUNNEL DETAILS
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY
SCALE: AS NOTED
CONTRACT NO. TF-3
SHEET NO. 52 OF
MADE W.J.W 5-68
CHECKED D.E.N. 5-68
IN CHARGE H.D.S.
NO. REVISION BY DATE
1 Final Check D.E.N 6-68


RICHMOND EXPRESSWAY SYSTEM
SECTION | PROJECT | SHEET NO. | TOTAL SHEETS
TF-3 | TOLL FACILITIES | 8 | 38
Cut out for coin tube mechanism
Top of Island
Top of Roadway
Pavement
Sub Slab
2½" I.D sleeve to extend through tunnel roof slab (typ).
SECTION F-F
Knockout In Splice Box For Drain
Treadle Drain 2" C.I. Pipe (Typ)
Treadle Frame To Be Placed By Toll Equipment Contractor Prior To The Placing Of Plaza Paving Under This Contract.
DETAIL - TREADLE DRAIN
Tunnel Wall
Direction of Traffic
For Islands with single auto. mach. see Note 1
For Islands with dual auto. mach. see Note 2 & 3
Face of Curb
Conduit Zone See Note 5
Canopy Support
Provide recess around column
Base Pl & Grout
Canopy pedestal
SECTION G-G
Anchor Strap See Detail "A"
See Detail "A"
Drill & Countersink
JUNCTION BOX
Treadle Frame Furnished & Placed By Toll Equip. Contractor
2" Clear
2½" Clear
2" Treadle Drain
SECTION C-C
10' TREADLE FRAME INSTALLATION
CONDUIT ZONE & PIPE SLEEVE LOCATION FOR AUTOMATIC TOLL MACHINE
(Location and dimension of Conduit Zones and Pipe sleeves are similar for each Direction of Traffic.)
Top of Island
℄ 2½" I.D. Pipe Sleeve
½" Projection of Pipe Sleeve
DETAIL "B"
Sub-Slab
COIN TUBE DETAIL AT FUTURE ISLAND LOCATION
No Scale
Canopy Pedestal
JUNCTION BOX LOCATION PLAN
℄ Island
℄ Tunnel
SUBSLAB TREATMENT AT HEAT DUCTS
Not to scale
Hole for ⅜" Mach. Screw
Anchor Strap
DETAIL "A"
Half size
(Frame & Cover to be Hot-Dipped Galvanized after fabrication)
Heat Duct, see additional details this sheet
2½" Booth Recess
℄ Booth & Island
Conduit zone (See Note 5)
Anchor Bolt (typ)
2½" I.D. Pipe Sleeve See Detail "B" For Future Islands See Note 4.
6'-0" Island
Direction of Traffic
NOTE: Utility Locations in Tunnel Ceiling Slab Future Islands A,B,C,P, & Q Similar
UTILITY LOCATIONS BARRIER PLAZA TOLL BOOTHS
℄ Future islands
Fill with concrete
20 oz. copper
10" Tunnel roof slab
KNOCK-OUT DETAIL
Not to Scale
MADE | W.J.M. | 5-68
CHECKED | D.E.N. | 5-68
IN CHARGE | H.D.S.
3 | Utility Locations Barrier Plaza Toll Booths | E.J.M. | 12-77
2 | Revl Treadle Frame & Drain | P.H.T. | 2-75
1 | Final Check | D.E.N. | 6-68
NO. | REVISION | BY | DATE

NOTES

1. Islands E, F, L, M, N & O will have a single coin tube and recess for automatic machine.
2. Islands G, H, I & K will have dual coin tubes and tube recesses for automatic machines. One location at each island will be for future automatic machines.
3. Island J will have duel coin tubes and tube recesses for future automatic machines.
4. All future island locations will have a single coin tube. Sleeve to be threaded and plugged.
5. Conduits to or from toll booths or automatic machines are to be placed totally within the zones shown. For conduit layouts and stubbing details, see Sheets 10, 12, 13 & 14.

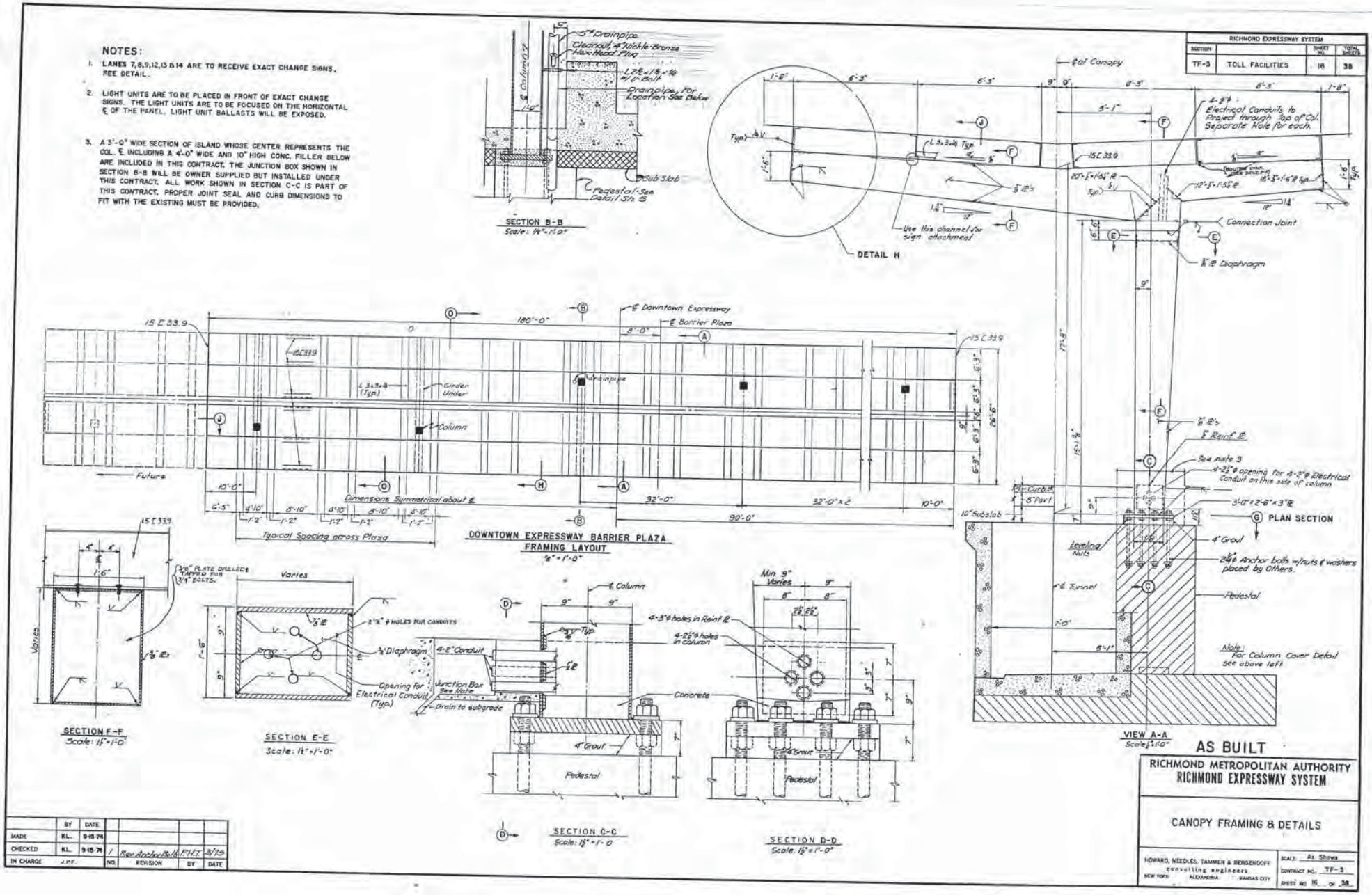
AS BUILT

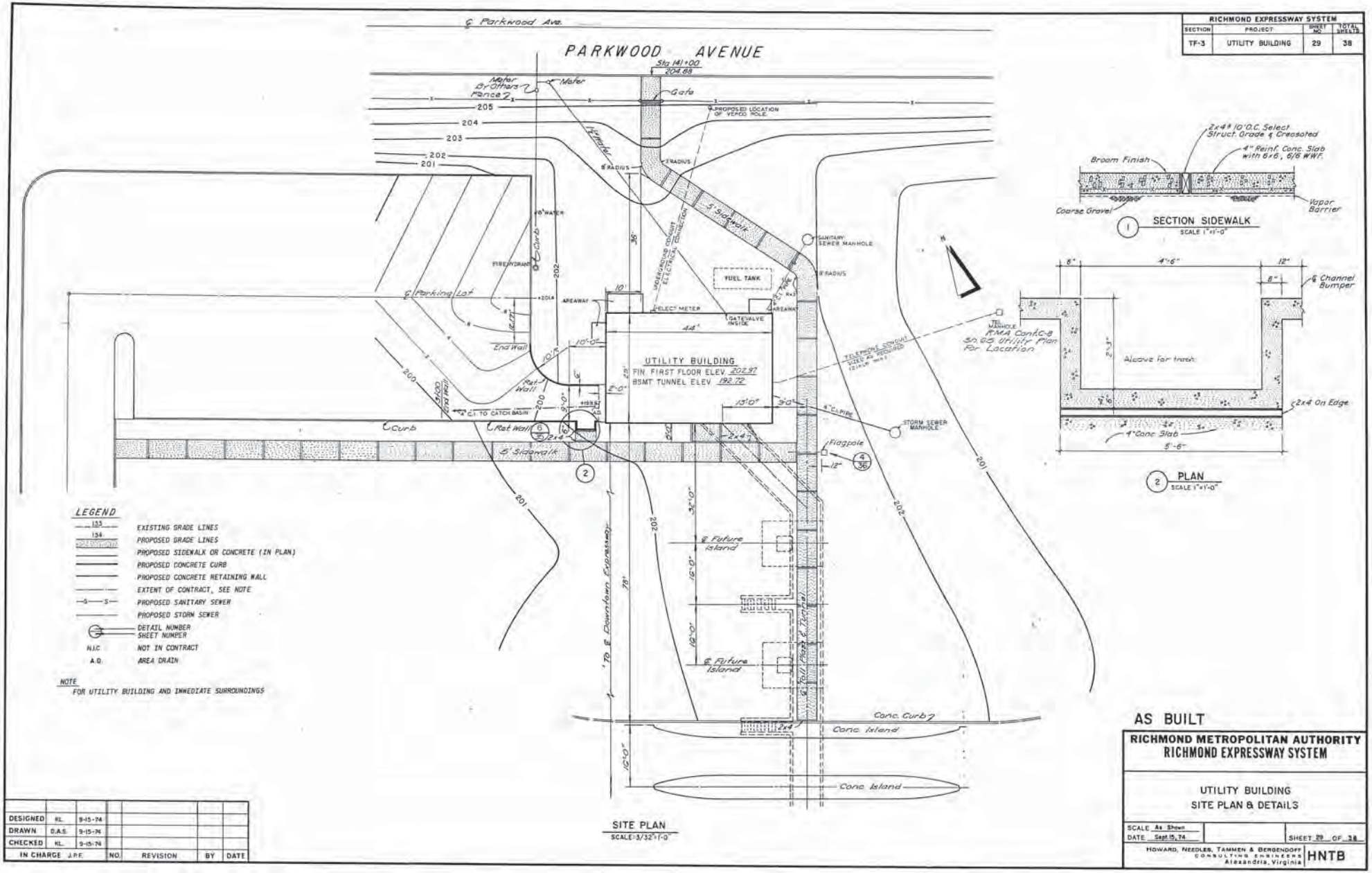
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

MISCELLANEOUS DETAILS

HOWARD, NEEDLES, TAMMEN & BERGENDOFF consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY

SCALE: AS NOTED
CONTRACT NO.: TF-3
SHEET NO. 8 OF


NOTES:
1. LANES 7,8,9,12,13 & 14 ARE TO RECEIVE EXACT CHANGE SIGNS. SEE DETAIL.
2. LIGHT UNITS ARE TO BE PLACED IN FRONT OF EXACT CHANGE SIGNS. THE LIGHT UNITS ARE TO BE FOCUSED ON THE HORIZONTAL ℄ OF THE PANEL. LIGHT UNIT BALLASTS WILL BE EXPOSED.
3. A 3'-0" WIDE SECTION OF ISLAND WHOSE CENTER REPRESENTS THE COL. ℄ INCLUDING A 4'-0" WIDE AND 10" HIGH CONC. FILLER BELOW ARE INCLUDED IN THIS CONTRACT. THE JUNCTION BOX SHOWN IN SECTION B-B WILL BE OWNER SUPPLIED BUT INSTALLED UNDER THIS CONTRACT. ALL WORK SHOWN IN SECTION C-C IS PART OF THIS CONTRACT. PROPER JOINT SEAL AND CURB DIMENSIONS TO FIT WITH THE EXISTING MUST BE PROVIDED.
SECTION B-B
DETAIL H
DOWNTOWN EXPRESSWAY BARRIER PLAZA FRAMING LAYOUT
SECTION F-F
SECTION E-E
SECTION C-C
SECTION D-D
PLAN SECTION
VIEW A-A
RICHMOND EXPRESSWAY SYSTEM
TF-3 TOLL FACILITIES 16 38
AS BUILT
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
CANOPY FRAMING & DETAILS
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY
SCALE: As Shown
CONTRACT NO. TF-3
SHEET NO. 16 OF 38



LEGEND

- EXISTING GRADE LINES
- PROPOSED GRADE LINES
- PROPOSED SIDEWALK OR CONCRETE (IN PLAN)
- PROPOSED CONCRETE CURB
- PROPOSED CONCRETE RETAINING WALL
- EXTENT OF CONTRACT, SEE NOTE
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- DETAIL NUMBER / SHEET NUMBER
- N.I.C. NOT IN CONTRACT
- A.D. AREA DRAIN

NOTE
FOR UTILITY BUILDING AND IMMEDIATE SURROUNDINGS

RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
TF-3	UTILITY BUILDING	29	38

DESIGNED	RL	9-15-74				
DRAWN	D.A.S.	9-15-74				
CHECKED	RL	9-15-74				
IN CHARGE	J.P.F.		NO.	REVISION	BY	DATE

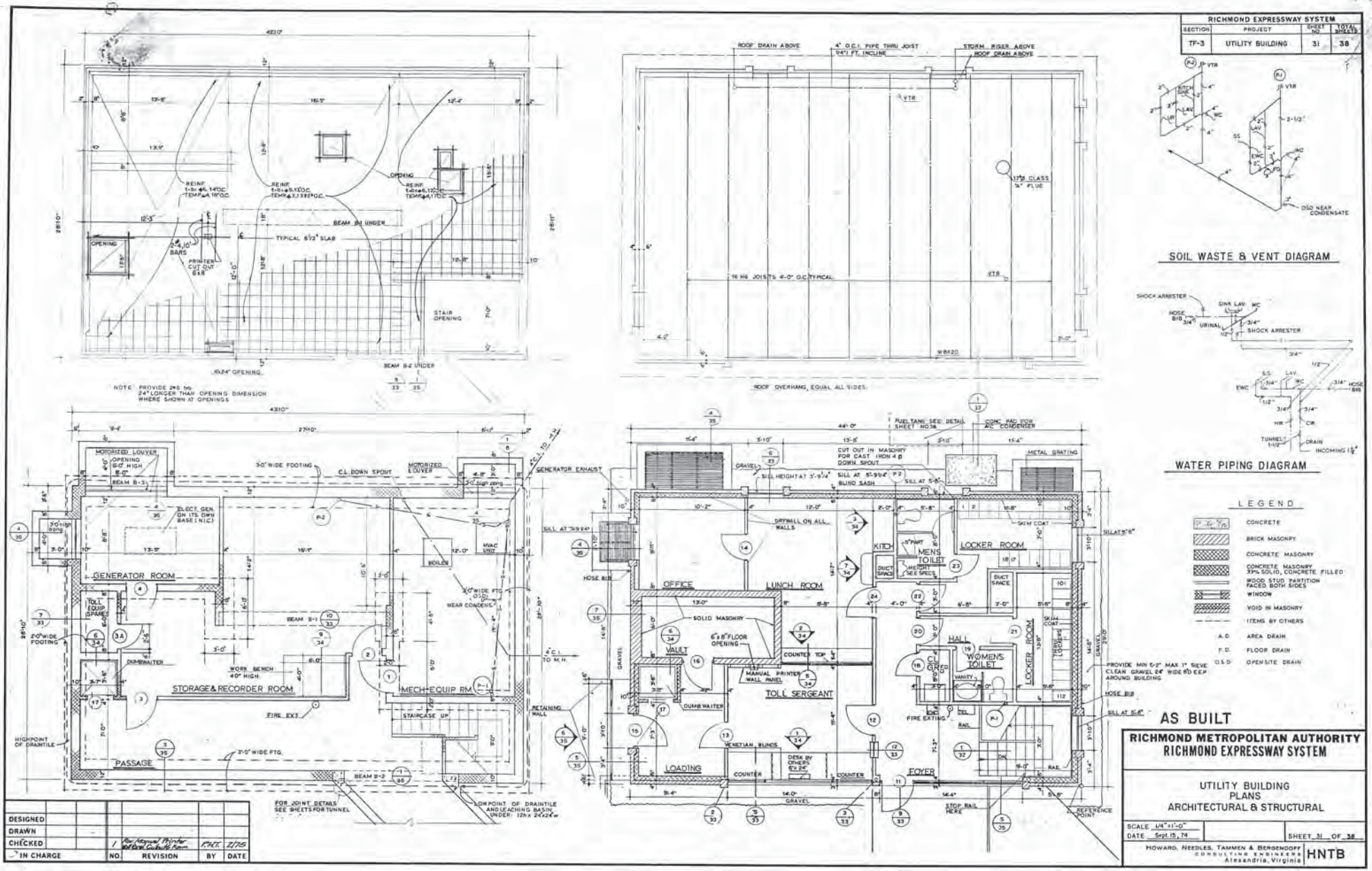
AS BUILT

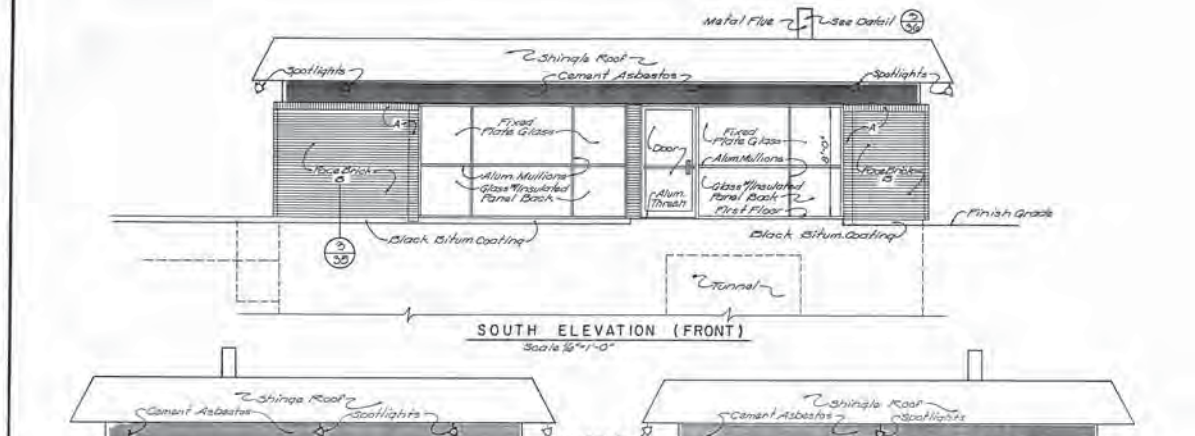
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

UTILITY BUILDING
SITE PLAN & DETAILS

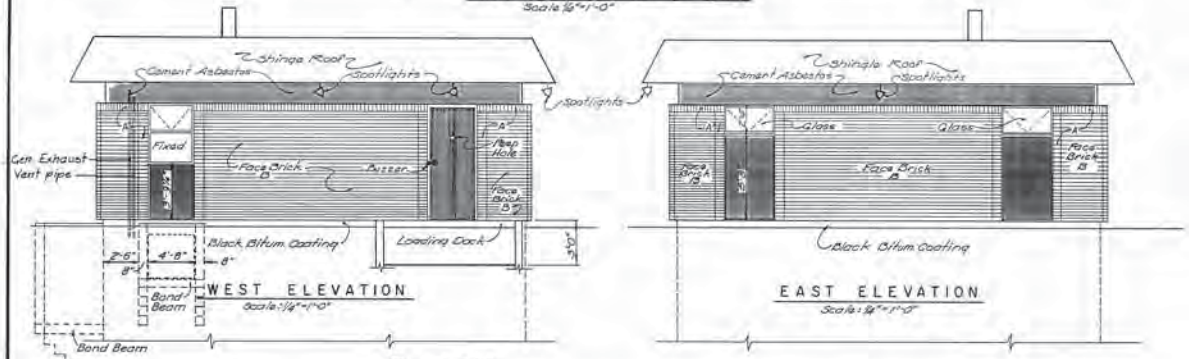
SCALE As Shown
DATE Sept 15, 74
SHEET 29 OF 38

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
Alexandria, Virginia
HNTB


RICHMOND EXPRESSWAY SYSTEM
SECTION | PROJECT | SHEET NO | TOTAL SHEETS
TF-3 | UTILITY BUILDING | 31 | 38
SOIL WASTE & VENT DIAGRAM
WATER PIPING DIAGRAM
LEGEND
CONCRETE
BRICK MASONRY
CONCRETE MASONRY
CONCRETE MASONRY 33% SOLID, CONCRETE FILLED
WOOD STUD PARTITION FACED BOTH SIDES
WINDOW
VOID IN MASONRY
ITEMS BY OTHERS
A.D. AREA DRAIN
F.D. FLOOR DRAIN
O.S.D. OPENSITE DRAIN
GENERATOR ROOM
STORAGE & RECORDER ROOM
MECH. EQUIP. RM.
PASSAGE
OFFICE
LUNCH ROOM
VAULT
TOLL SERGEANT
LOADING
FOYER
LOCKER ROOM
MENS TOILET
WOMENS TOILET
HALL
KITCH
AS BUILT
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
UTILITY BUILDING
PLANS
ARCHITECTURAL & STRUCTURAL
SCALE 1/4"=1'-0"
DATE Sept 15, 74
SHEET 31 OF 38
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
Alexandria, Virginia
HNTB
DESIGNED
DRAWN
CHECKED
IN CHARGE
NO. REVISION BY DATE

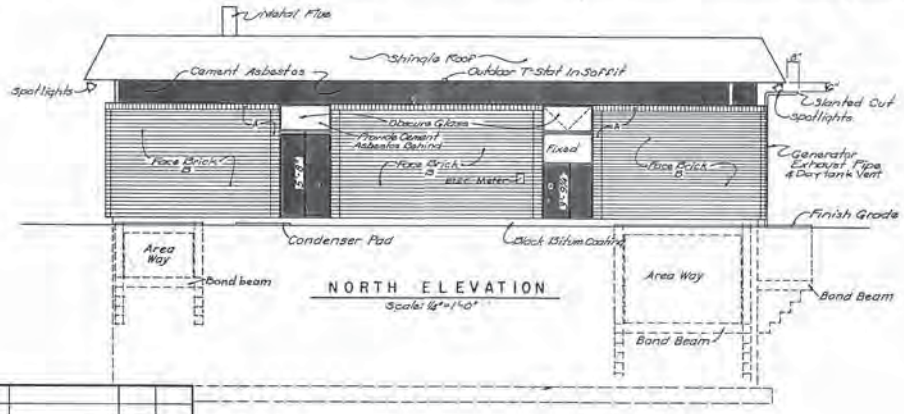


SOUTH ELEVATION (FRONT)
Scale: 1/4"=1'-0"

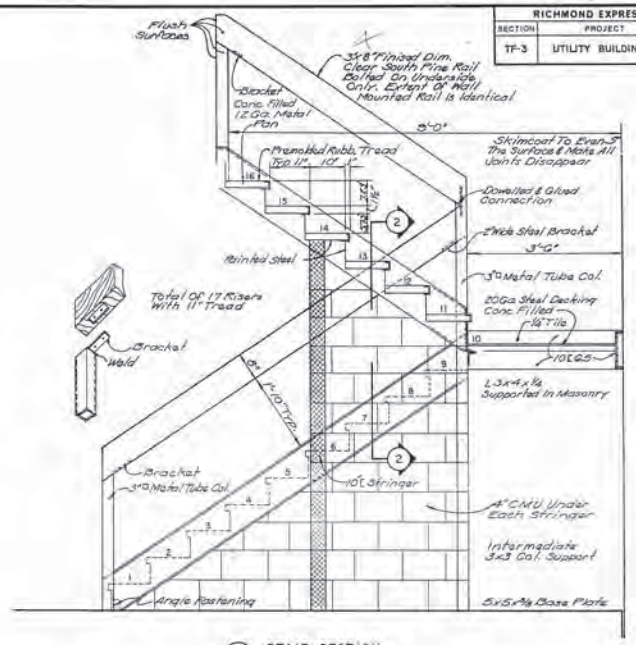


WEST ELEVATION
Scale: 1/4"=1'-0"

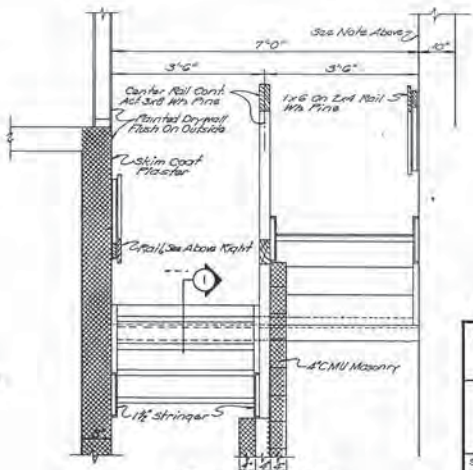
EAST ELEVATION
Scale: 1/4"=1'-0"



NORTH ELEVATION
Scale: 1/4"=1'-0"



1 STAIR SECTION
Scale: 3/4"=1'-0"



2 STAIR SECTION
Scale: 3/4"=1'-0"

DESIGNED	KL	9-15-74			
DRAWN	O.A.S.	9-15-74			
CHECKED	KL	9-15-74			
IN CHARGE	J.P.F.	NO.	REVISION	BY	DATE

AS BUILT

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

UTILITY BUILDING
ELEVATIONS & SECTIONS

SCALE As Shown
DATE Sept 15, 74
SHEET 32 OF 38

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
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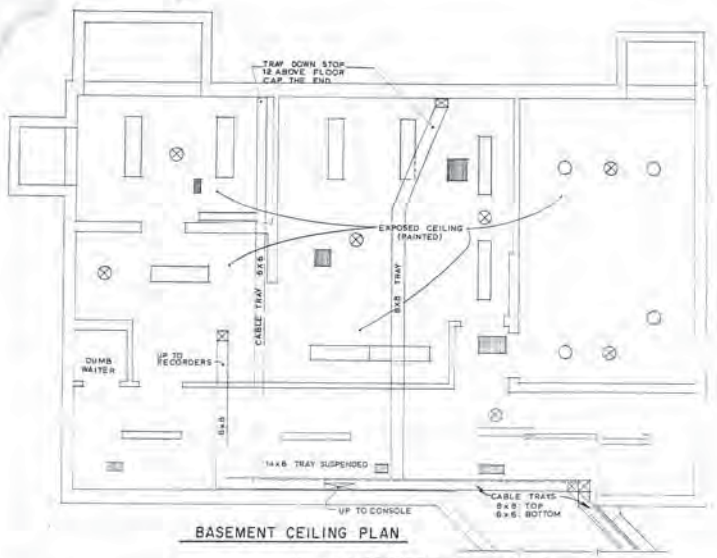
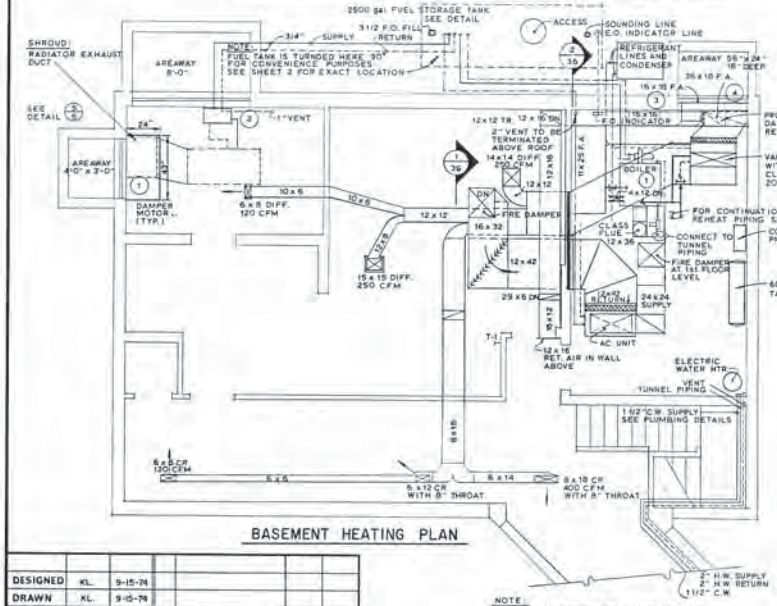
RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
TF-3	UTILITY BUILDING	32	38

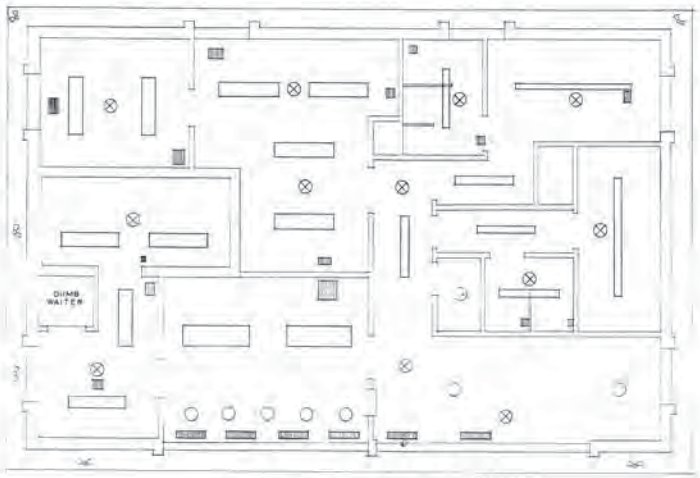
RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
TF-3	UTILITY BUILDING	37	38



BASEMENT CEILING PLAN



BASEMENT HEATING PLAN



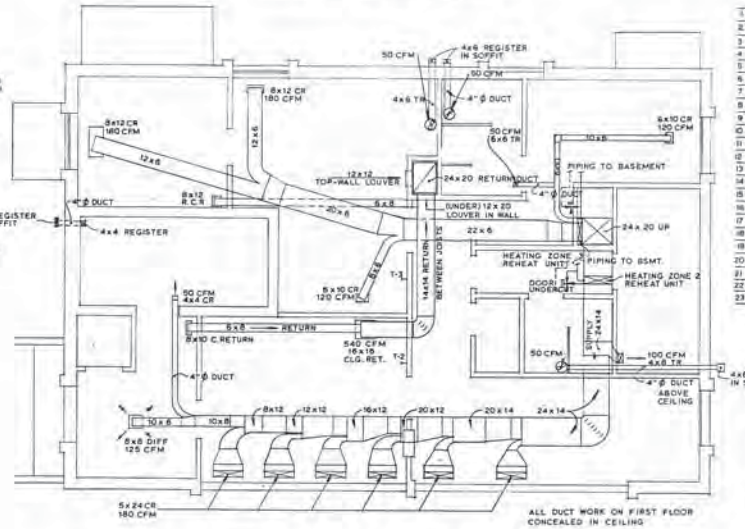
FIRST FLOOR CEILING PLAN

LEGEND

- PARTITION
- 5x12 DUCT (SIZE)
- FLUORESCENT FIXTURE
- INCANDESCENT FIXTURE
- EMERGENCY INCANDESCENT FIXTURE
- CLG. AIR REGISTER
- EXHAUST FAN

ABBREVIATIONS

TR TOP REGISTER
CR CEILING REGISTER
CFM CUB. FT./ MIN.
CW COLD WATER



FIRST FLOOR HEATING PLAN

MOTOR SCHEDULE

1	INLINE PUMP TUNNEL/AW 3	32 GPM	142 FT. HEAD	3/4 H.P.	208/3/60	
2	CIRCULATOR 1	12 GPM	12 FT. HEAD	1/8 H.P.	115/1/60	
3	CIRCULATOR 2	12 GPM	12 FT. HEAD	1/8 HP	115/1/60	
4	EXHAUST FAN, KITCHEN	50 CFM			115/1/60	50 W
5	EXHAUST FAN, MEN TOILET	50 CFM			115/1/60	50 W
6	EXHAUST FAN, PEN TOIL.	50 CFM			115/1/60	50 W
7	A/C AIRHANDL. UNIT	2000 CFM		2 HP	208/3/60	
8	CONDENSING UNIT 1	2000 CFM		2 HP	208/3/60	30 KW
9	CONDENSING UNIT 2	1300 CFM		1 HP	208/3/60	10 KW
10	HVAC UNIT	1300 CFM		1 HP	208/3/60	10 KW
11	OIL BURNER			1/3 HP	115/1/60	
12	DAMPER MOTOR 1			1/6 HP	115/1/60	
13	DAMPER MOTOR 2	SEE BASEMENT		1/6 HP	115/1/60	
14	DAMPER MOTOR 3	HEATING PLAN		1/6 HP	115/1/60	
15	DAMPER MOTOR 4			1/6 HP	115/1/60	
16	VOID					
17	UNIT HEATER 1			1/3 HP	115/1/60	
18	UNIT HEATER 2		BARRIER PLAZA BOOTHS	1/3 HP	115/1/60	
19	UNIT HEATER 3			1/3 HP	115/1/60	
20	UNIT HEATER 4			1/3 HP	115/1/60	
21	TUNNEL HEATER 1			1/5 HP	115/1/60	
22	TUNNEL HEATER 2			1/5 HP	115/1/60	
23	DUMBWAITER			1 HP	208/3/60	

DESIGNED	KL	9-15-74			
DRAWN	KL	9-15-74			
CHECKED	KL	9-15-74			
IN CHARGE JRF		NO.	REVISION	BY	DATE

AS BUILT

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

UTILITY BUILDING
MECHANICAL PLANS & SCHEDULES

SCALE 1/4"=1'-0"
DATE Sept. 15, 74

SHEET 37 OF 38

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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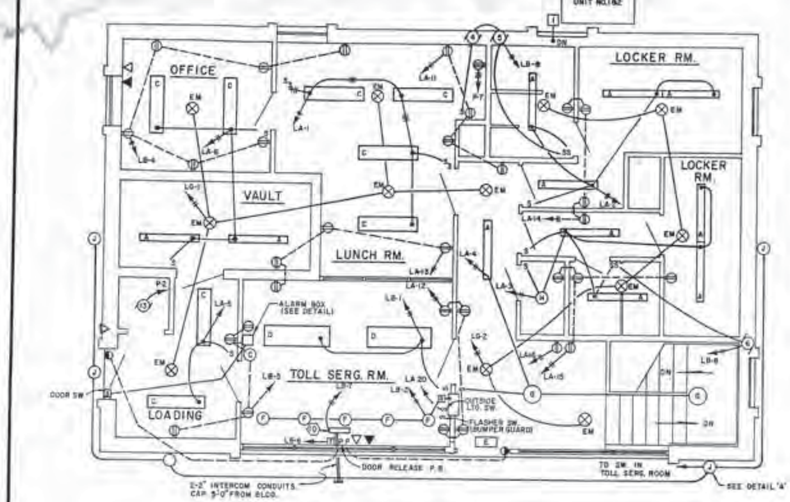
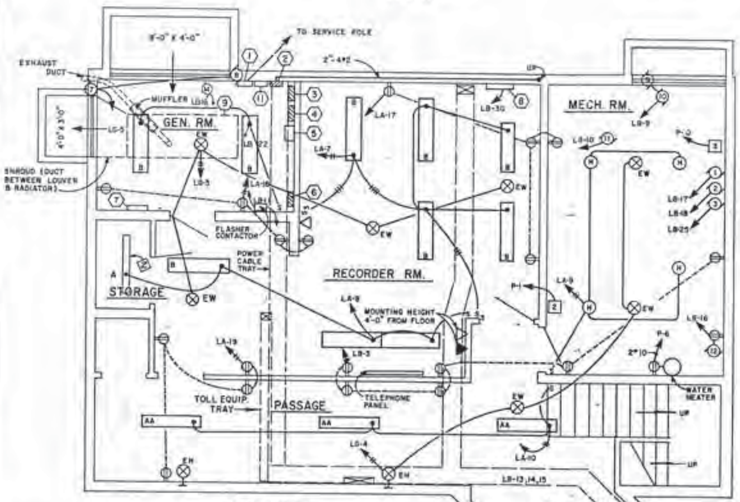
RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
TF-3	UTILITY BUILDING	38	38



FIRST FLOOR
1/4" = 1'-0"



BASEMENT
1/4" = 1'-0"

LEGEND

- FLUORESCENT FIXTURE, LETTER INDICATES TYPE
- INCANDESCENT FIXTURE, LETTER INDICATES TYPE.
- EMERGENCY LIGHT - IN CEILING
- EMERGENCY LIGHT - WALL MOUNTED
- EXIT LIGHT
- DIMMER
- DUPLEX WALL RECEPTACLE OUTLET
- RANGE RECEPTACLE
- S — SINGLE POLE SWITCH
- S_3 — THREE WAY SWITCH
- DOOR RELEASE SYSTEM
- TELEPHONE OUTLET
- INTERCOM SYSTEM TELEPHONE OUTLET
- ELECTRIC CLOCK OUTLET
- TRANSFORMER FOR DOOR RELEASE SYSTEM
- PANEL BOARD
- WIRING CONCEALED IN WALLS OR CEILING
- WIRING CONCEALED IN FLOOR
- LA-3 — HOME RUN WITH PANEL & CIRC. DESIGNATION

1. CURRENT TRANSFORMER & METERING EQUIPMENT
2. MAIN DISTRIBUTION PANEL BOARD - P
3. PANEL BOARD - LA
4. PANEL BOARD - LB
5. AUTO TRANSFER SWITCH
6. EMERGENCY GENERATOR PANEL - LG
7. GENERATOR CONTROL PANEL
8. RECORDER ROOM PANEL BOARD - R
9. GENERATOR SET (45 KW CONTINUOUS)
10. INTER-COM PANEL
11. DISCONNECT SWITCH (400 A) & FUSES (225 A)

1. CIRCU. PUMP #1 (ZONE-1), 1/6 HP, 115 V, 1Ø, 60~, 2#12
2. CIRCU. PUMP #2 (ZONE-2) 1/6 HP, 115 V, 1Ø, 60~, 2#12
3. CIRCU. PUMP #3 (TUNNEL), 3/4 HP, 208 V, 3Ø, 60~ 4#12
4. EXHAUST FAN (KITCHEN)
5. EXHAUST FAN (MEN TOILET)
6. EXHAUST FAN (WOMEN TOILET) — (4–6) ALL 1/12 HP, 115 V, 1Ø, 60~, 3#12
7. DAMPER MOTOR #1
8. DAMPER MOTOR #2
9. DAMPER MOTOR #3
10. DAMPER MOTOR #4 — (7–10) ALL 1/6 HP, 115 V, 60~, 1Ø, 2#12, 1+2 CONNECTED TO GENERATOR CONTROLS, 3+4 CONNECTED TO H & V CONTROLS
11. OIL BURNER, 1/3 HP, 115 V, 1Ø, 60~ 2#12
12. SPARE 2#12
13. DUMBWAITER 1 HP, 208 V, 3Ø, 60~, 4#12

- [1] CONDENSER UNIT #1 (2 HP & 30 KW) & CONDENSER UNIT #2 (2 HP & 10 KW)
- [2] A/C AIR HANDLING UNIT (2 HP)
- [3] HVAC UNIT (1 HP)
- 14. GENERATOR DAY TANK PUMP

GENERAL NOTES:
FOR LIGHTING FIXTURE SCHEDULE SEE SPEC'S
TOLL ISLAND 'J' BETWEEN LANES 10 & 11 REQUIRES NO INDIVIDUAL CT

MAIN DISTRIBUTION PANEL-P

120/208 V, 3Ø, 4W, SN, 42 POLES, 600 A BUS — WESTINGHOUSE TYPE CDP

CIRC NO.	POLE	TRIP	DESCRIPTION
1	2	20 A	AC UNIT #3 (2 HP)
2	2	30 A	SPARE
3	2	20 A	SPARE
4	3	20 A	SPARE
5	3	50 A	KITCHEN UNIT 8.5 KW
6	2	30 A	ELECT. W.H. UTILITY (4 KW)
7	2	25 A	DUMB WAITER
8	2	20 A	AC UNIT
9	3	30 A	SPARE
10	3	50 A	HVAC UNIT (1 HP & 10 KW)
11	3	50 A	SPARE
12	3	150 A	CONDENSERS, #1 & #2 (@ 43.0 KW)
13	3	150 A	PANEL BOARD LA
14	3	150 A	PANEL BOARD LB
15	3		SPACE
16	3		SPACE

PANEL BOARD-LB

120/208 V, 3Ø, 4W, SN, 42 POLES, 225 A BUS — WESTINGHOUSE TYPE WBA

CIRC NO.	POLE	TRIP	DESCRIPTION
1, 2	1	20A	LTG. 1ST. FLOOR
3, 4, 5	1	20A	RECEPT. 1st. FLOOR & BASEMENT DR. ALARM
6	1	20A	DOOR RELEASE SYSTEM
7	1	20A	INTERCOM PANEL
8	1	20A	EXHAUST FANS (THREE)
9	1	20A	DAMPER MOTORS #3 & #4
10	1	20A	OIL BURNER
11	1	20A	FLASHER CONTACTOR (BUMPER GUARD)
12	1	20A	TUNNEL HEATER FANS (THREE)
13, 14, 15	1	20A	LIGHTING TUNNEL ('A'-'B' LIGHTS)
16	1	20A	LIGHTING TUNNEL
17	1	20A	CIRCULATOR PUMP #1
18	1	20A	CIRCULATOR PUMP #2
19	1	20A	STAIRCASE LTG. (TUNNEL)
20	3	50A	AIR COMPRESSOR (CONTROLS)
21	1	20A	SPARE
22	1	20A	LIGHTS GENERATOR RM.
23	1	20A	LIGHTING TUNNEL ('C' LIGHTS)
24	1	20A	SPARE
25	3	20A	CIRCULATOR PUMP #3 (TUNNEL)
26	3	50A	TOLL ISLAND 'E'
27	3	50A	P/BD-R (RECORD RM.)
28	3	50A	TOLL ISLANDS 'F' & 'H'
29	3	50A	TOLL ISLAND 'G'
30	3	60A	TOLL ISLAND 'I'
31	3	50A	TOLL ISLAND 'K'
32	3	50A	TOLL ISLAND 'M'
33	3	50A	TOLL ISLANDS 'L' & 'N'
34	3	50A	TOLL ISLAND 'O'

PANEL BOARD-LA

120/208 V, 3Ø, 4W, SN, 32 POLES, 225 A BUS — WESTINGHOUSE TYPE WBA

CIRC. NO.	POLE	TRIP	DESCRIPTION
1, 2, 3, 4, 5, 6	1	20 A	LTG. 1st FLOOR
7, 8, 9, 10	1	20 A	LTG. BASEMENT
11, 12, 13, 14, 15	1	20 A	RECEPTACLES 1st FLOOR
16	1	20 A	ELECT. WATER COOLER
17, 18, 19	1	20 A	RECEPTACLES BASEMENT
20	1	20 A	OUTSIDE FLOOD LIGHTING
21	1	20 A	SPARE
22	1	20 A	SPARE
23	1	20 A	SPARE
24	1	20 A	SPARE
25	1	20 A	SPARE
26	1	20 A	SPARE
27	1	20 A	SPARE
28	1	20 A	SPARE
29, 30	1		SPACE
31, 32	1		SPACE

PANEL BOARD - R

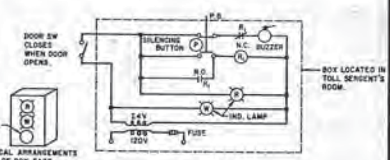
120/208 V, 3Ø, 4W, SN, 10 POLES, 100 A BUS — WESTINGHOUSE TYPE WBA

CIRC. NO.	POLE	TRIP	DESCRIPTION
1 to 16	1	20A	RECORDER ROOM CIRCS.
17 to 20	1		SPACES

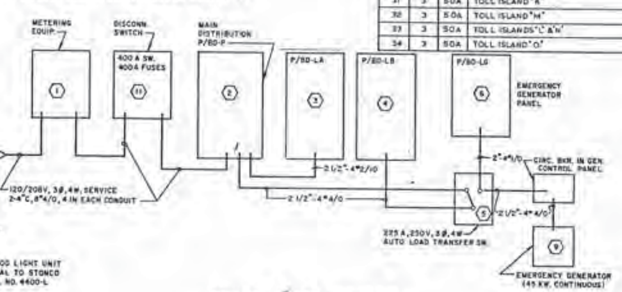
PANEL BOARD - LG

120/208 V 3Ø, 4W, 10 POLES 100 A BUS — WESTINGHOUSE TYPE WBA

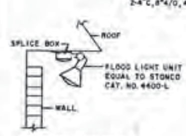
CIRC. NO.	POLE	TRIP	DESCRIPTION
1	1	20 A	LTG. 1 ST. FLOOR (EMG.)
2	1	20A	LTG. 1 ST. FLOOR (EMG.)
3	1	20A	LTG. BASEMENT (EMG.)
4	1	20 A	LTG. BASEMENT (EMG.)
5	1	20A	DAMPER MOTORS #1 & #2
6	1	20A	SPARE
7	1	20 A	SPARE
8	1		SPACE
9	1		SPACE
10	1		SPACE



ALARM SYSTEM
NO SCALE



POWER RISER DIAGRAM
NO SCALE



OUTSIDE LIGHTING DETAIL A

			NO.	REVISION	BY	DATE
DESIGNED						
DRAWN			2	Added New Room & Adjust Printer Cutout	P.H.T.	2/75
CHECKED			1	PANEL LB-CHANGE CTS 26,28,29,30,31 ADD 32,33,34	KL	10-17-74
IN CHARGE			NO.	REVISION	BY	DATE

AS BUILT

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

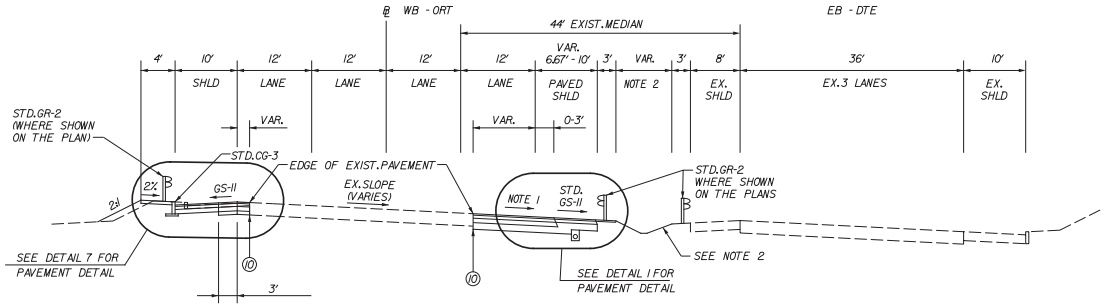
UTILITY BUILDING
ELECTRICAL

SCALE AS NOTED
DATE
SHEET 38 OF 38

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
Alexandria, Virginia
HNTB

DOWNTOWN EXPRESSWAY (DTE) OPEN ROAD TOLLING

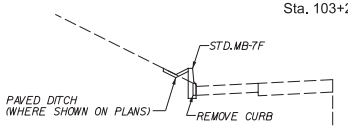
ORIGINAL PLANS



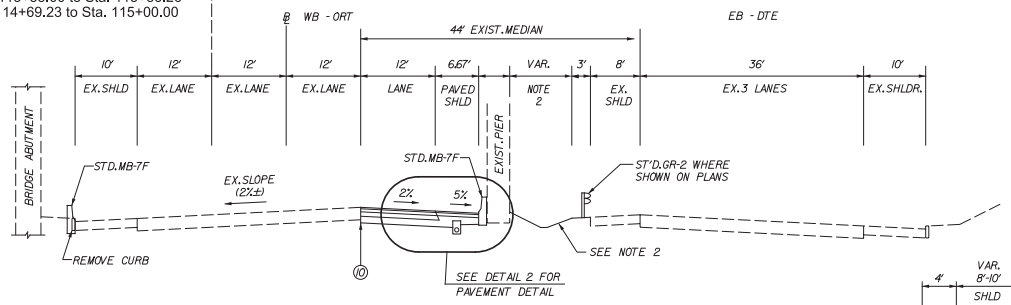
STA. 103+25 TO 104+95 ONLY

WB-ORT (RTE. 195)

Sta. 100+00.00 to Sta. 113+86.26 RT.
Sta. 114+69.23 to Sta. 115+00.00 RT.
Sta. 103+25.00 to Sta. 104+95.00 LT.

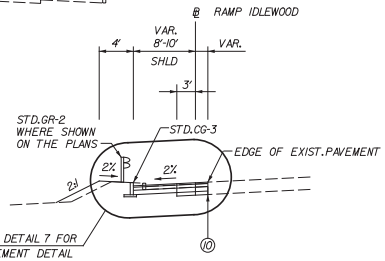


Sta. 113+55.00 to Sta. 113+86.26
Sta. 114+69.23 to Sta. 115+00.00



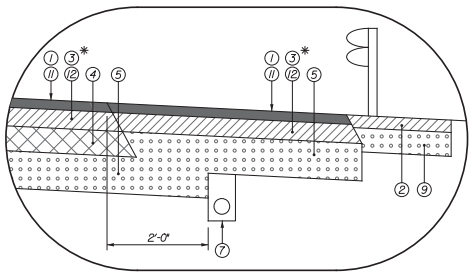
WB-ORT AT MEADOW STREET BRIDGE

Sta. 113+86.26 to Sta. 114+69.23 RT.
Sta. 113+55.00 to Sta. 115+00.00 LT.



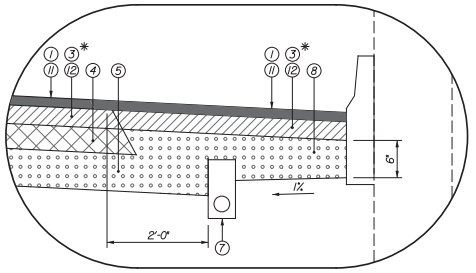
RAMP IDLEWOOD

Sta. 10+00.00 to Sta. 15+32.07

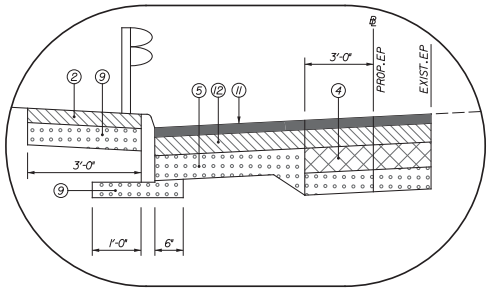


* USE (11) & (12) WB ORT STA.100+00 TO 115+00
USE (1) & (3) WB ORT STA.115+00 TO END OF PROJECT

DETAIL 1
NTS



DETAIL 2
NTS



DETAIL 7
NTS

LEGEND

(1) SURFACE COURSE, 1 1/2 IN. ASPHALT CONCRETE TYPE SMA-9.5 @ 165 LBS./SY.
(2) INTERMEDIATE COURSE, 2.0 IN. ASPHALT CONCRETE TYPE IM-19.0A
(3) INTERMEDIATE COURSE, 3.0 IN. ASPHALT CONCRETE TYPE SMA-19.0
(4) BASE COURSE, 4.0 IN. ASPHALT CONCRETE TYPE BM-25.0A
(5) SUBBASE, 6.0 IN. UNTREATED AGGREGATE MATERIAL TYPE 1, SIZE NO. 21-B
(6) MILL EXISTING PAVEMENT TO A DEPTH OF 1.5 IN. AND OVERLAY WITH ASPHALT CONCRETE TYPE SMA-9.5 @ 165 LBS./SY.
(7) STD. UD-4 UNDERDRAIN REQ'D.
(8) SUBBASE, VAR. THICKNESS, UNTREATED AGGREGATE MATERIAL TYPE 1, SIZE NO. 21-B
(9) SUBBASE, 4.0 IN., UNTREATED AGGREGATE MATERIAL TYPE 1, SIZE NO. 21-B
(10) SAWCUT
(11) 1 1/2 IN. ASPHALT CONCRETE TYPE SM-9.5A @ 165 LBS./SY.
(12) 3 IN. ASPHALT CONCRETE TYPE IM-19.0A
(13) LEVELING COURSE, VAR. DEPTH ASPHALT CONCRETE TYPE SMA-19.0, 2" MIN.
(14) REMOVE AND REPLACE EXISTING PAVEMENT ALONG THE EDGE AS SHOWN IN VDOT STD. WP-2. SEE DETAIL 9 SHT 2(3) FOR REPLACED PAVEMENT
(15) VAR. DEPTH, ASPHALT CONCRETE TYPE BM-25.0, 3" MIN.
(16) NOT USED
(17) HYDRAULIC CEMENT CONCRETE SIDEWALK, 4"
(18) NOT USED
(19) SURFACE COURSE, VAR. DEPTH ASPHALT CONCRETE TYPE SMA-9.5, 1.5" MIN.

NOTES

1. SEE PROFILES FOR CROSS SLOPES.
2. SEE CROSS SECTIONS FOR DITCH LOCATIONS AND INVERTS.
3. SEE SHEET 2L(3) FOR DITCH TYPICAL SECTION.

10' 0 10' 20'
SCALE: 1"=10'

REVISIONS

D487012(11).dgn
Tuesday, March 15, 2011

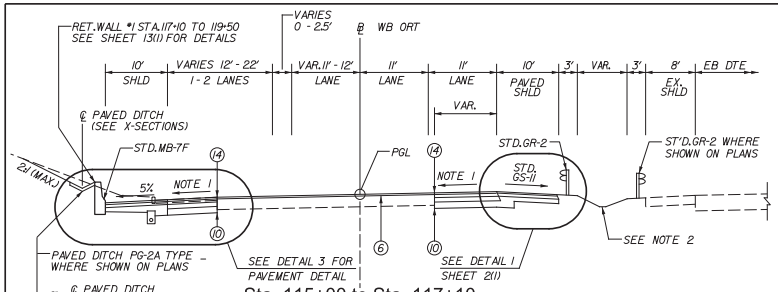
HNTB
2900 S. QUINCY STREET, SUITE 200
ARLINGTON, VIRGINIA
(703) 824-5100

RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

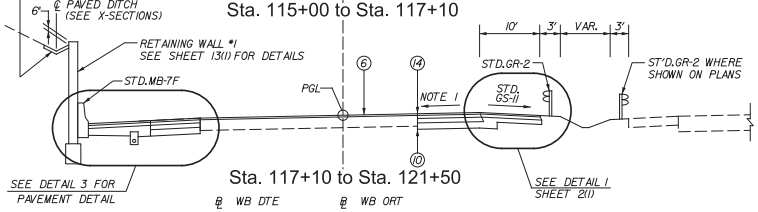
DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

TYPICAL SECTIONS

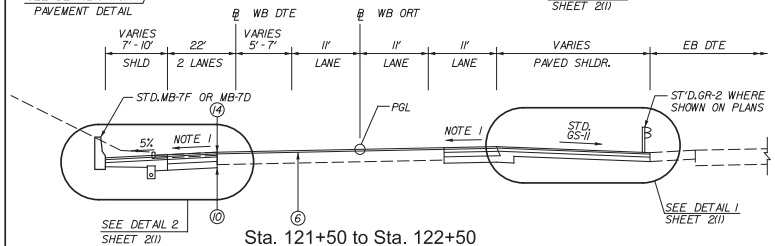
Scale:	Date:	Contract No.:	Sheet:
1"=10'-0"	FEB. 25, 2011	DTEORT-2011	2(11)



Sta. 115+00 to Sta. 117+10

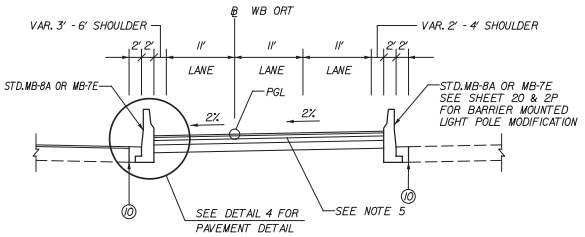


Sta. 117+10 to Sta. 121+50

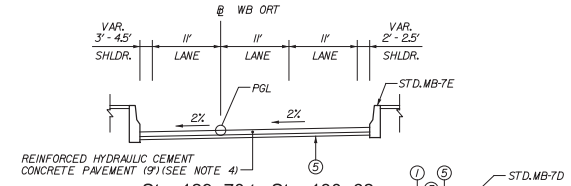


Sta. 121+50 to Sta. 122+50

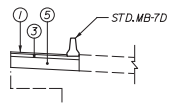
WESTBOUND OPEN ROAD TOLLING (ORT)



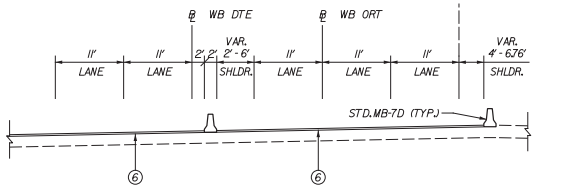
Sta. 130+62 to Sta. 138+32.89



Sta. 129+70 to Sta. 130+62

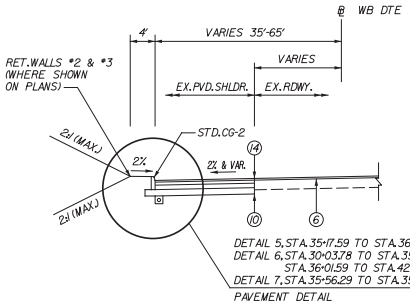


Sta. 122+50 to Sta. 123+50



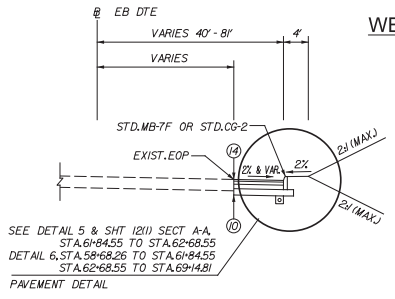
WESTBOUND OPEN ROAD TOLLING (ORT)

Sta. 122+50 to Sta. 129+70



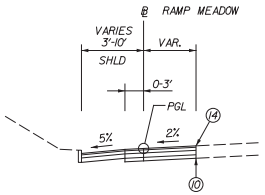
WESTBOUND DOWNTOWN EXPRESSWAY (DTE)

Sta. 30+03.78 to Sta. 42+87.04



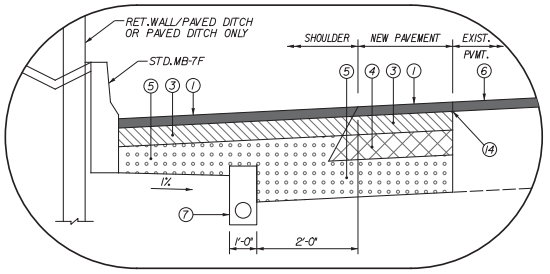
EASTBOUND DOWNTOWN EXPRESSWAY (DTE)

Sta. 58+68.26 to Sta. 69+14.81



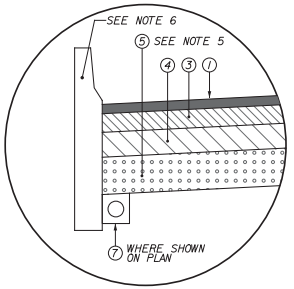
RAMP MEADOW

Sta. 13+00 to Sta. 15+09



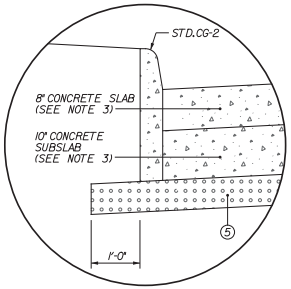
DETAIL 3

NTS



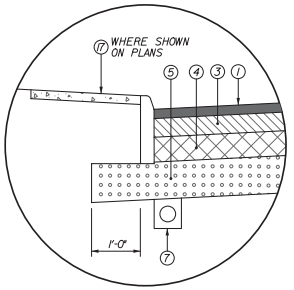
DETAIL 4

NTS



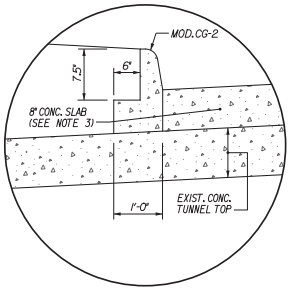
DETAIL 5

NTS



DETAIL 6

NTS



DETAIL 7

NTS

LEGEND

1. SURFACE COURSE, 1 1/2 IN. ASPHALT CONCRETE TYPE SMA-9.5 @ 165 LBS./SY.
2. INTERMEDIATE COURSE, 2.0 IN. ASPHALT CONCRETE TYPE IM-19.0A
3. INTERMEDIATE COURSE, 3.0 IN. ASPHALT CONCRETE TYPE SMA-19.0
4. BASE COURSE, 4.0 IN. ASPHALT CONCRETE TYPE BM-25.0A
5. SUBBASE, 6.0 IN. UNTREATED AGGREGATE MATERIAL TYPE I, SIZE NO. 21-B
6. MILL EXISTING PAVEMENT TO A DEPTH OF 1.5" AND OVERLAY WITH ASPHALT CONCRETE TYPE SMA-9.5 @ 165 LBS./SY.
7. STD. UD-4 UNDERDRAIN REQ'D.
8. SUBBASE, VAR. THICKNESS, UNTREATED AGGREGATE MATERIAL TYPE I, SIZE NO. 21-B
9. SUBBASE, 4.0 IN., UNTREATED AGGREGATE MATERIAL TYPE I, SIZE NO. 21-B
10. SAWCUT
11. 1 1/2 IN. ASPHALT CONCRETE TYPE SM-9.5A @ 165 LBS./SY.
12. 3 IN. ASPHALT CONCRETE TYPE IM-19.0A
13. LEVELING COURSE, VAR. DEPTH ASPHALT CONCRETE TYPE SMA-19.0, 2" MIN.
14. REMOVE AND REPLACE EXISTING PAVEMENT ALONG THE EDGE AS SHOWN IN VDOT STD. WP-2. SEE DETAIL 9 SHT 21(3) FOR REPLACED PAVEMENT
15. VAR. DEPTH, ASPHALT CONCRETE TYPE BM-25.0, 3" MIN.
16. NOT USED
17. HYDRAULIC CEMENT CONCRETE SIDEWALK, 4"
18. NOT USED
19. SURFACE COURSE, VAR. DEPTH ASPHALT CONCRETE TYPE SMA-9.5, 1.5" MIN.

NOTES

1. SEE PROFILES FOR CROSS SLOPES.
2. SEE CROSS SECTIONS FOR DITCH LOCATIONS AND INVERTS.
3. SEE TOLL PLAZA PLANS FOR PAVEMENT DETAILS. 10" SLAB NOT REQ'D. OVER EXISTING TUNNEL.
4. SEE SHEET 2M FOR DETAILS.
5. ASPHALT LAYERS SHALL BE PLACED UPON EXISTING CONCRETE SLAB FROM STATION 130+62 TO 131+47
6. ST'D.MB-7 & MB-8A BARRIER SHALL BE DOWELLED TO EXISTING 10" CONC. SLAB STA.130+62 TO 131+47 IN ACCORDANCE WITH ST'D. MB-7D. COST FOR DOWELLING SHALL BE INCIDENTAL TO THE COST OF CONC. BARRIER.

10' 0 10' 20'
SCALE: 1"=10'

REVISIONS

9-16-11 REVISED WB-DTE & EB-DTE SECTIONS AND NOTE 3. ADDED DETAIL 7.

HNTB
2900 S. QUINCY STREET, SUITE 200
ARLINGTON, VIRGINIA
(703) 824-5100

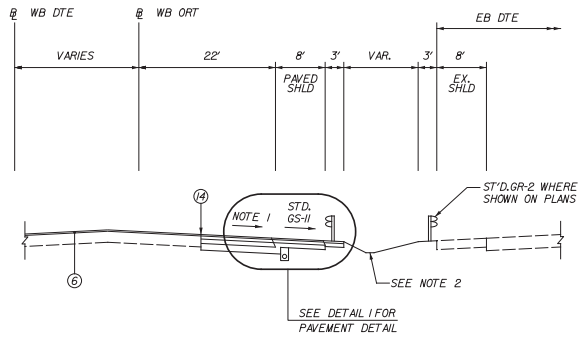
RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

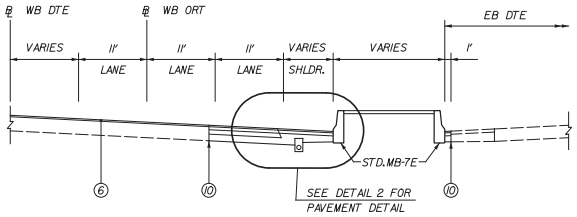
TYPICAL SECTIONS

Scale:	Date:	Contract No.:	Sheet:
1"=10'-0"	FEB. 25, 2011	DTEORT-2011	2(2)

D487010(2).dgn
Tuesday, September 20, 2011

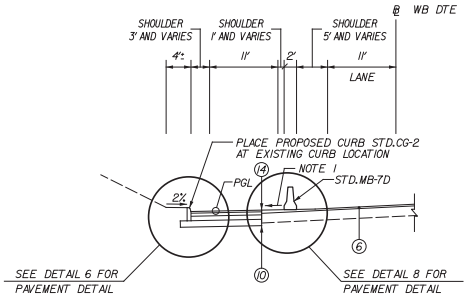


STA. 139+58.61 TO STA. 145+47.05



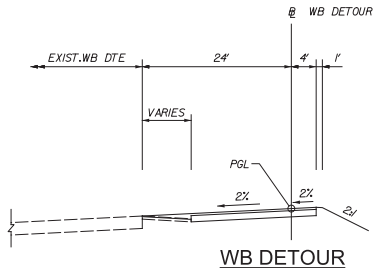
STA. 138+32.89 TO STA. 139+58.61

WESTBOUND DOWNTOWN EXPRESSWAY (DTE)



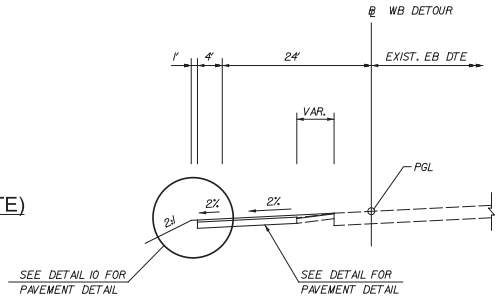
RAMP LINDEN

STA. 9+80.00 TO STA. 19+44.11



WB DETOUR

STA. 22+00.00 to STA. 26+00.00

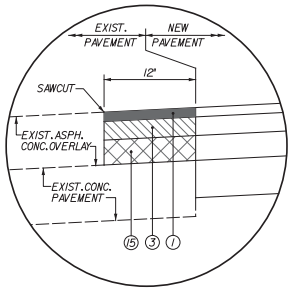


WB DETOUR

STA. 17+00.00 to STA. 22+00.00

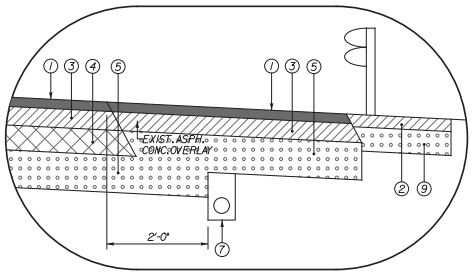
LEGEND

(1) SURFACE COURSE, 1 1/2 IN. ASPHALT CONCRETE TYPE SMA-9.5 @ 165 LBS./SY.
(2) INTERMEDIATE COURSE, 2.0 IN. ASPHALT CONCRETE TYPE IM-19.0A
(3) INTERMEDIATE COURSE, 3.0 IN. ASPHALT CONCRETE TYPE SMA-19.0
(4) BASE COURSE, 4.0 IN. ASPHALT CONCRETE TYPE BM-25.0A
(5) SUBBASE, 6.0 IN. UNTREATED AGGREGATE MATERIAL TYPE 1, SIZE NO. 21-B
(6) MILL EXISTING PAVEMENT TO A DEPTH OF 1.5" AND OVERLAY WITH ASPHALT CONCRETE TYPE SMA-9.5 @ 165 LBS./SY.
(7) STD. UD-4 UNDERDRAIN REQ'D.
(8) SUBBASE, VAR. THICKNESS, UNTREATED AGGREGATE MATERIAL TYPE 1, SIZE NO. 21-B
(9) SUBBASE, 4.0 IN., UNTREATED AGGREGATE MATERIAL TYPE 1, SIZE NO. 21-B
(10) SAWCUT
(11) 1 1/2 IN. ASPHALT CONCRETE TYPE SM-9.5A @ 165 LBS./SY.
(12) 3 IN. ASPHALT CONCRETE TYPE IM-19.0A
(13) LEVELING COURSE, VAR. DEPTH ASPHALT CONCRETE TYPE SMA-19.0, 2" MIN.
(14) REMOVE AND REPLACE EXISTING PAVEMENT ALONG THE EDGE AS SHOWN IN VDOT STD. WP-2. SEE DETAIL 9 SHT 2(3) FOR REPLACED PAVEMENT
(15) VAR. DEPTH, ASPHALT CONCRETE TYPE BM-25.0, 3" MIN.
(16) NOT USED
(17) HYDRAULIC CEMENT CONCRETE SIDEWALK, 4"
(18) NOT USED
(19) SURFACE COURSE, VAR. DEPTH ASPHALT CONCRETE TYPE SMA-9.5, 1.5" MIN.



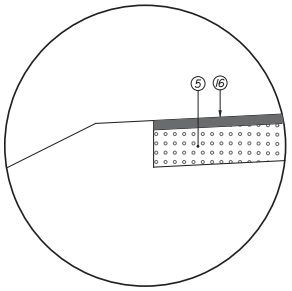
DETAIL 9

NTS



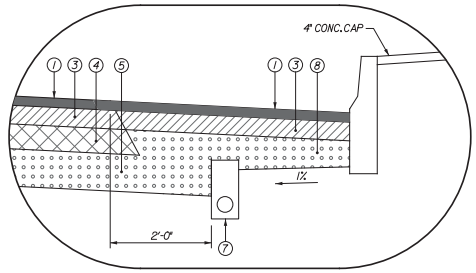
DETAIL 1

NTS



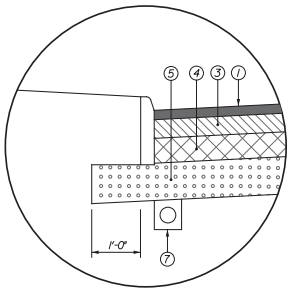
DETAIL 10

NTS



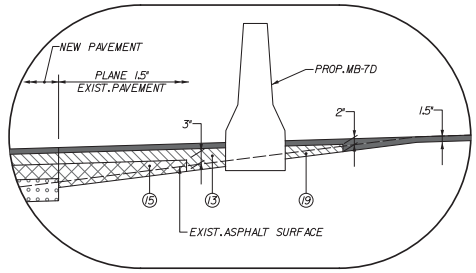
DETAIL 2

NTS



DETAIL 6

NTS



DETAIL 8

NTS

NOTES

1. SEE PROFILES FOR CROSS SLOPES.
2. SEE CROSS SECTIONS FOR DITCH LOCATIONS AND INVERTS.
3. SEE SHEET 2(3) FOR DITCH TYPICAL SECTION.

10' 0 10' 20'
SCALE: 1"=10'

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DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

TYPICAL SECTIONS

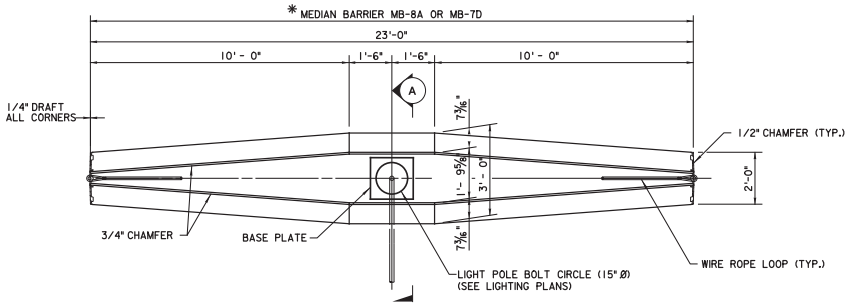
Scale:	Date:	Contract No.:	Sheet:
1"=10'-0"	FEB. 25, 2011	DTEORT-2011	2(3)

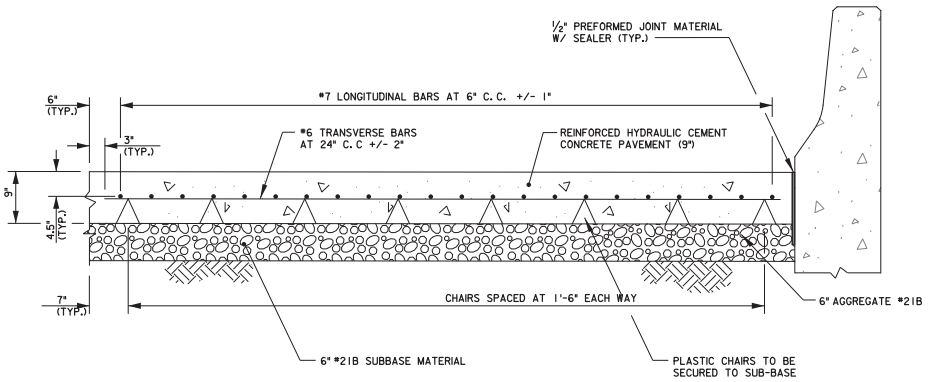
REVISIONS
10-8-12 REVISED RAMP LINDEN TYP. LANE WIDTHS

Level1 Check Print Stamp
Originator Name(Print) Signature Date
Checker
Backchecker
Updater
Validater

D4870102(3).dgn
Wednesday, October 03, 2012

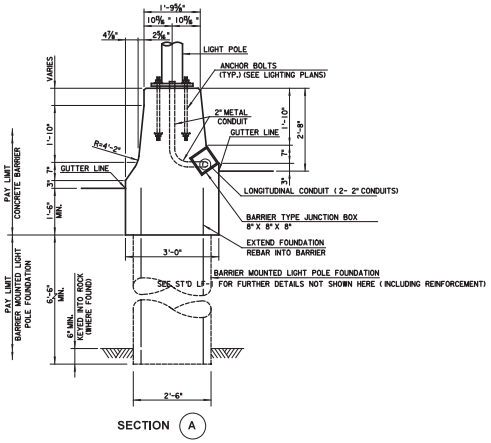
* PAYMENT FOR CONCRETE BARRIER TYPES MB-7D, 7E, 7F & 8A IS PAID ON A LINEAR FOOT BASIS. VARIATIONS IN WIDTH REQUIRED FOR LIGHT POLE INSTALLATIONS UP TO 3'-0" IN WIDTH IS INCIDENTAL TO THE CONTRACT UNIT PRICE FOR CONCRETE BARRIER. COST OF LONGITUDINAL CONDUIT, JUNCTION BOXES, METAL CONDUIT SHALL BE INCIDENTAL TO THE UNIT PRICE BID FOR CONCRETE BARRIER.





WB ORT ZONE CONCRETE PAVEMENT SECTION

NTS



SECTION (A)

BARRIER MOUNTED LIGHT POLE DETAILS

STA. 123+88 RT. WB-ORT
STA. 125+40 RT. WB-ORT
STA. 126+87 RT. WB-ORT
STA. 128+38 RT. WB-ORT
STA. 129+86 RT. WB-ORT
STA. 132+47 RT. WB-ORT
STA. 134+01 RT. WB-ORT
STA. 135+53 RT. WB-ORT
STA. 137+00 RT. WB-ORT
STA. 138+57 RT. WB-ORT

NOTES:

1. CONTRACTOR SHALL SUBMIT POUR SEQUENCE PRIOR TO POUR FOR APPROVAL BY THE ENGINEER.
2. SEE VDOT STANDARD PR-3 AND PR-6 FOR DETAILS NOT SHOWN ON THIS SHEET.
3. SLAB CONCRETE SHALL BE TYPE A4, HIGH EARLY CONCRETE.
4. REINFORCING BARS SHALL BE GLASSFIBER REINFORCED POLYMER MATERIAL. SEE SPEC. SECTION 316 FOR DETAILS.
5. REINFORCING BARS SHALL BE SECURED USING PLASTIC TIES, NYLON TIES, OR PLASTIC SNAP TIES. NO METAL TIES OR TIES CONTAINING METAL SHALL BE USED.
6. ALL WORK SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.
7. PLASTIC OR NON-METALLIC (NON CORROSIVE) CHAIRS SHALL BE USED TO ELEVATE REBAR AT LOCATIONS SHOWN.
8. REBAR SHALL BE SECURED TO CHAIRS.
9. CHAIRS SHALL BE SECURED TO 6" SUB-BASE BY METHOD(S) APPROVED BY ENGINEER.
10. CONTRACTOR SHALL COORDINATE WITH TOLL PROVIDER PRIOR TO POURING CONCRETE AND PRIOR TO SAW-CUTTING JOINTS TO FACILITATE TOLL PROVIDER INSTALLATION OF PAVEMENT LOOPS, CONDUITS OR OTHER PAVEMENT ITEMS REQUIRED FOR OPEN ROAD TOLLING OPERATIONS.

D48701102M.dgn
Tuesday, March 15, 2011

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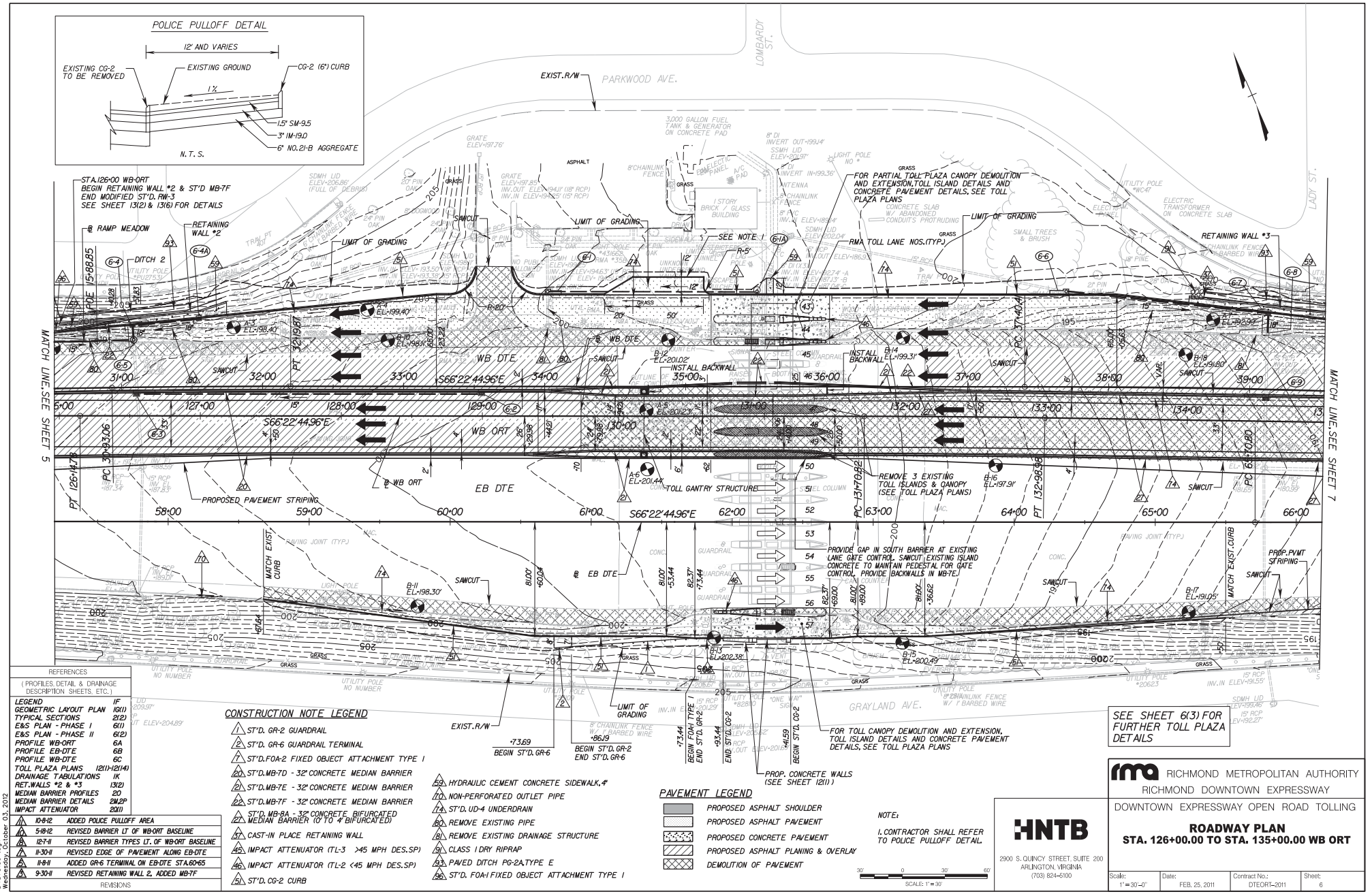
RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

ROADWAY DETAILS
BARRIER MOUNTED LIGHT POLE & ORT ZONE CONCRETE PAVING

Scale:	Date:	Contract No.:	Sheet:
NTS	FEB. 25, 2011	DTEORT-2011	2M



REFERENCES
(PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

LEGEND	IF
GEOMETRIC LAYOUT PLAN	1G(1)
TYPICAL SECTIONS	2(2)
E&S PLAN - PHASE I	6(1)
E&S PLAN - PHASE II	6(2)
PROFILE WB-ORT	6A
PROFILE EB-DTE	6B
PROFILE WB-DTE	6C
TOLL PLAZA PLANS	12(1)-12(14)
DRAINAGE TABULATIONS	IK
RET.WALLS #2 & #3	13(2)
MEDIAN BARRIER PROFILES	2O
MEDIAN BARRIER DETAILS	2M,2P
IMPACT ATTENUATOR	2Q(1)

10	10-8-12	ADDED POLICE PULLOFF AREA
9	5-18-12	REVISED BARRIER LT OF WB-ORT BASELINE
8	12-7-11	REVISED BARRIER TYPES LT. OF WB-ORT BASELINE
7	11-30-11	REVISED EDGE OF PAVEMENT ALONG EB-DTE
6	11-8-11	ADDED GR-6 TERMINAL ON EB-DTE ST.A.60+65
5	9-30-11	REVISED RETAINING WALL 2, ADDED MB-7F

REVISIONS

CONSTRUCTION NOTE LEGEND

1. ST'D. GR-2 GUARDRAIL
2. ST'D. GR-6 GUARDRAIL TERMINAL
7. ST'D.FOA-2 FIXED OBJECT ATTACHMENT TYPE I
20. ST'D.MB-7D - 32" CONCRETE MEDIAN BARRIER
21. ST'D.MB-7E - 32" CONCRETE MEDIAN BARRIER
22. ST'D.MB-7F - 32" CONCRETE MEDIAN BARRIER
27. ST'D. MB-8A - 32" CONCRETE BIFURCATED MEDIAN BARRIER (0 TO 4' BIFURCATED)
37. CAST-IN PLACE RETAINING WALL
45. IMPACT ATTENUATOR (TL-3 >45 MPH DES.SP)
46. IMPACT ATTENUATOR (TL-2 <45 MPH DES.SP)
49. ST'D. CG-2 CURB
59. HYDRAULIC CEMENT CONCRETE SIDEWALK,4"
70. NON-PERFORATED OUTLET PIPE
74. ST'D. UD-4 UNDERDRAIN
80. REMOVE EXISTING PIPE
81. REMOVE EXISTING DRAINAGE STRUCTURE
91. CLASS I DRY RIPRAP
93. PAVED DITCH PG-2A,TYPE E
96. ST'D. FOA-I FIXED OBJECT ATTACHMENT TYPE I

PAVEMENT LEGEND

- PROPOSED ASPHALT SHOULDER
- PROPOSED ASPHALT PAVEMENT
- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PLANING & OVERLAY
- DEMOLITION OF PAVEMENT

NOTE:
1. CONTRACTOR SHALL REFER TO POLICE PULLOFF DETAIL.

SCALE: 1" = 30'

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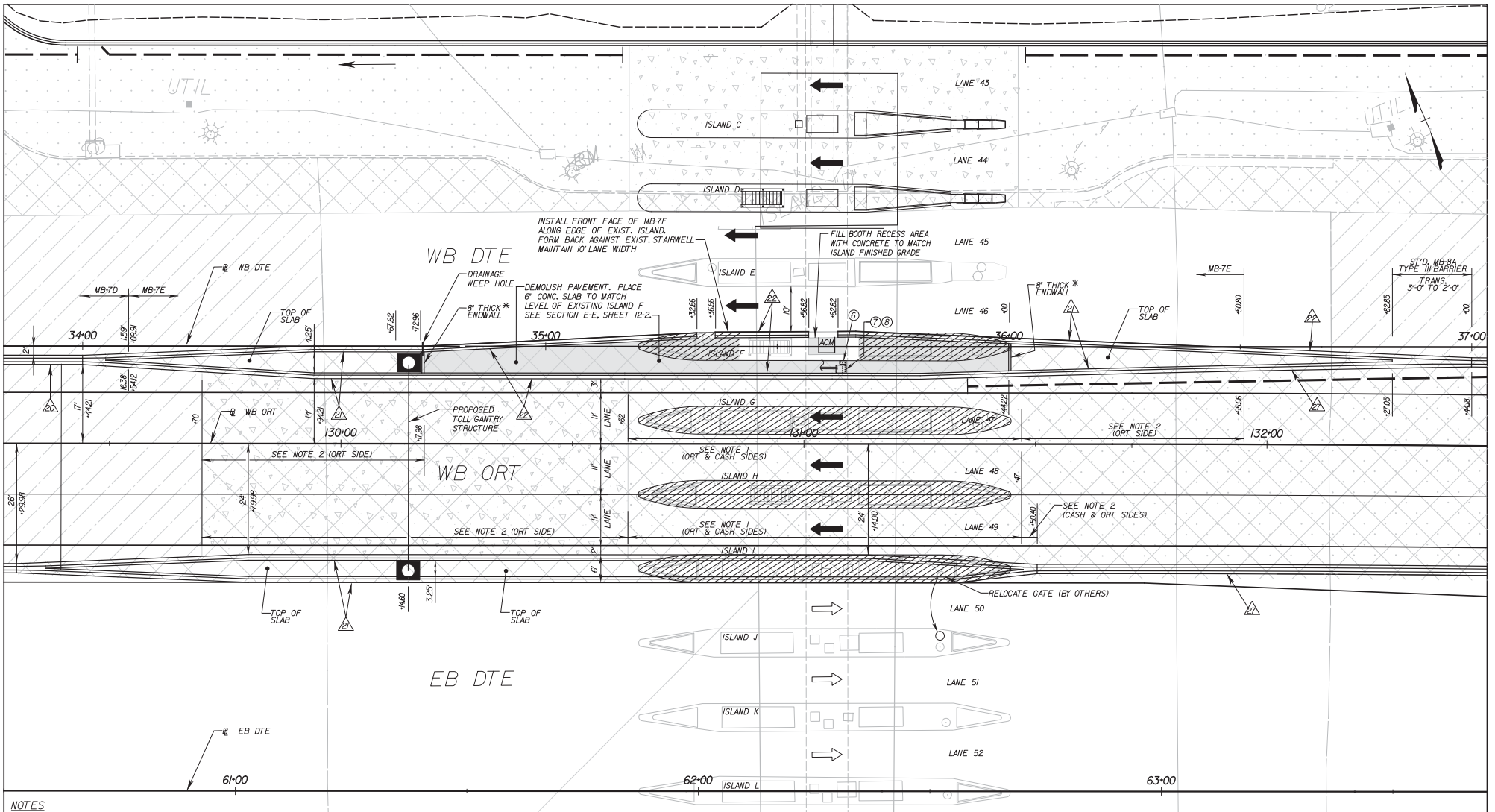
RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY
DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

ROADWAY PLAN
STA. 126+00.00 TO STA. 135+00.00 WB ORT

Scale:	Date:	Contract No.:	Sheet:
1" = 30'-0"	FEB. 25, 2011	DTEORT-2011	6

D4870106.dgn
Wednesday, October 03, 2012



NOTES

1) PROVIDE DOWELS FROM BARRIER TO EXISTING CONCRETE SLAB MAXIMUM 3' INTO SLAB AT 2' SPACING. ST'D BARRIER DETAILS MODIFIED FOR ADJUSTED CONCRETE QUANTITY & DOWELING.

2) PROVIDE ADDITIONAL CONCRETE DEPTH TO ST'D DETAIL FOR 18" TOTAL FOOTING DEPTH.

THE ABOVE BARRIER FOOTING MODIFICATION SHALL BE PAID AS "MEDIAN BARRIER FOOTING MODIFICATIONS" BY L.F.

REVISIONS	
5-18-12	REVISED BARRIER STA 13+95 TO 132+27 AND ADDED BARRIER FOOTING NOTES
12-7-11	ADDED SHEET

TOLL EQUIPMENT LEGEND (SEE SHEET II(13) FOR DETAILS)

(6) SURFACE MOUTED JUNCTION BOX, 12" X 12" X 12" MIN. DIMENSIONS
(7) SURFACE MOUTED JUNCTION BOX, 24" LONG X 18" X 18" MIN. DIMENSIONS
(8) CONCRETE PAD FOR EACH JUNCTION BOX

*ENDWALLS SHALL HAVE 2 ROWS OF #4 HORIZONTAL BARS @ 8" C/C (VERTICALLY) DOWELED INTO THE MB-7F BARRIERS.

PAVEMENT LEGEND

PROPOSED CONCRETE SLAB
PROPOSED ASPHALT PAVEMENT
PROPOSED CONCRETE PAVEMENT
PROPOSED ASPHALT PLANING & OVERLAY
DEMOLITION OF PAVEMENT
PROPOSED DEMOLITION OF CONCRETE ISLAND

CONSTRUCTION NOTE LEGEND

(2) ST'D. MB-7D - 32" CONCRETE MEDIAN BARRIER
(2) ST'D. MB-7E - 32" CONCRETE MEDIAN BARRIER
(2) ST'D. MB-7F - 32" CONCRETE MEDIAN BARRIER
(2) ST'D. MB-8A - 32" CONCRETE MEDIAN BARRIER

SCALE: 1" = 10'

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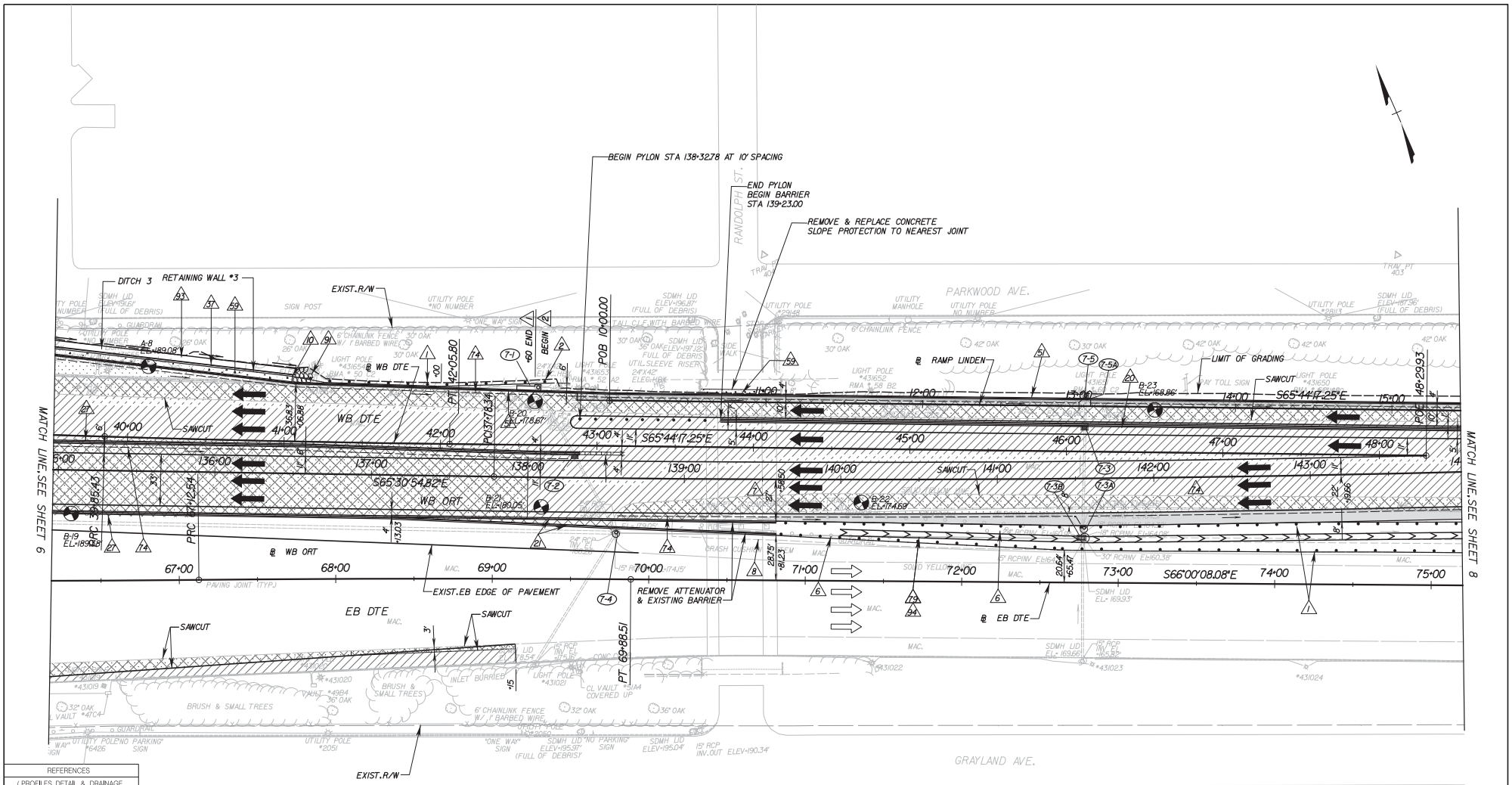
RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY
DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

ROADWAY PLAN AT TRAFFIC GANTRY

Scale:	Date:	Contract No.:	Sheet:
1" = 10'-0"	FEB. 25, 2011	DTEORT-2011	6(3)

D48701061(3).dgn
Friday, June 08, 2012



REFERENCES	
(PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)	
LEGEND	1F
GEOMETRIC LAYOUT PLAN	1G(1)
TYPICAL SECTIONS	2(1-3)
E&S PLAN - PHASE I	7(1)
E&S PLAN - PHASE II	7(2)
PROFILE WB-ORT	7A
PROFILE EB-DTE	7B
PROFILE WB-DTE	7C
PROFILE RAMP LINDEN	7D
DRAINAGE TABULATIONS	1K
RETAINING WALL #3	(3)(2)
MEDIAN BARRIER PROFILES	2O
MEDIAN BARRIER DETAILS	2M,2P
IMPACT ATTENUATOR	2O(1)

REVISIONS
10-8-12 REVISED BARRIER ON RAMP, ADDED PYLONS
REVISED BARRIER RIGHT OF WB-ORT BASELINE

D4870107.dgn
Tuesday, October 02, 2012

CONSTRUCTION NOTE LEGEND

1. ST'D.GR-2 GUARDRAIL
2. ST'D.GR-6 GUARDRAIL
6. REMOVAL OF EXISTING GUARDRAIL
7. ST'D.FOA-2 FIXED OBJECT ATTACHMENT TYPE I
8. ST'D.FOA-2 FIXED OBJECT ATTACHMENT TYPE II
10. ST'D.FOA-I FIXED OBJECT ATTACHMENT TYPE I
20. ST'D.MB-7D - 32" CONCRETE MEDIAN BARRIER
21. ST'D.MB-7E - 32" CONCRETE MEDIAN BARRIER
22. ST'D. MB-8A - 32" CONCRETE BIFURCATED MEDIAN BARRIER (0 TO 4' BIFURCATED)
37. CONCRETE GRAVITY WALL (RW-3)
45. IMPACT ATTENUATOR (TL-3>45mph DESIGN SPEED)
51. ST'D. CG-2 CURB
59. HYDRAULIC CEMENT CONCRETE SIDEWALK, 4"
74. ST'D. UD-4 UNDERDRAIN
79. ST'D. EC-2 PROTECTIVE COVERING
91. CLASS I DRY RIPRAP
93. PAVED DITCH PG-2A, TYPE E
94. GRADED FLAT BOTTOM DITCH

PAVEMENT LEGEND

- PROPOSED ASPHALT SHOULDER
- PROPOSED ASPHALT PAVEMENT
- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PLANING & OVERLAY
- DEMOLITION OF PAVEMENT

30' 0 30' 60'
SCALE: 1" = 30'

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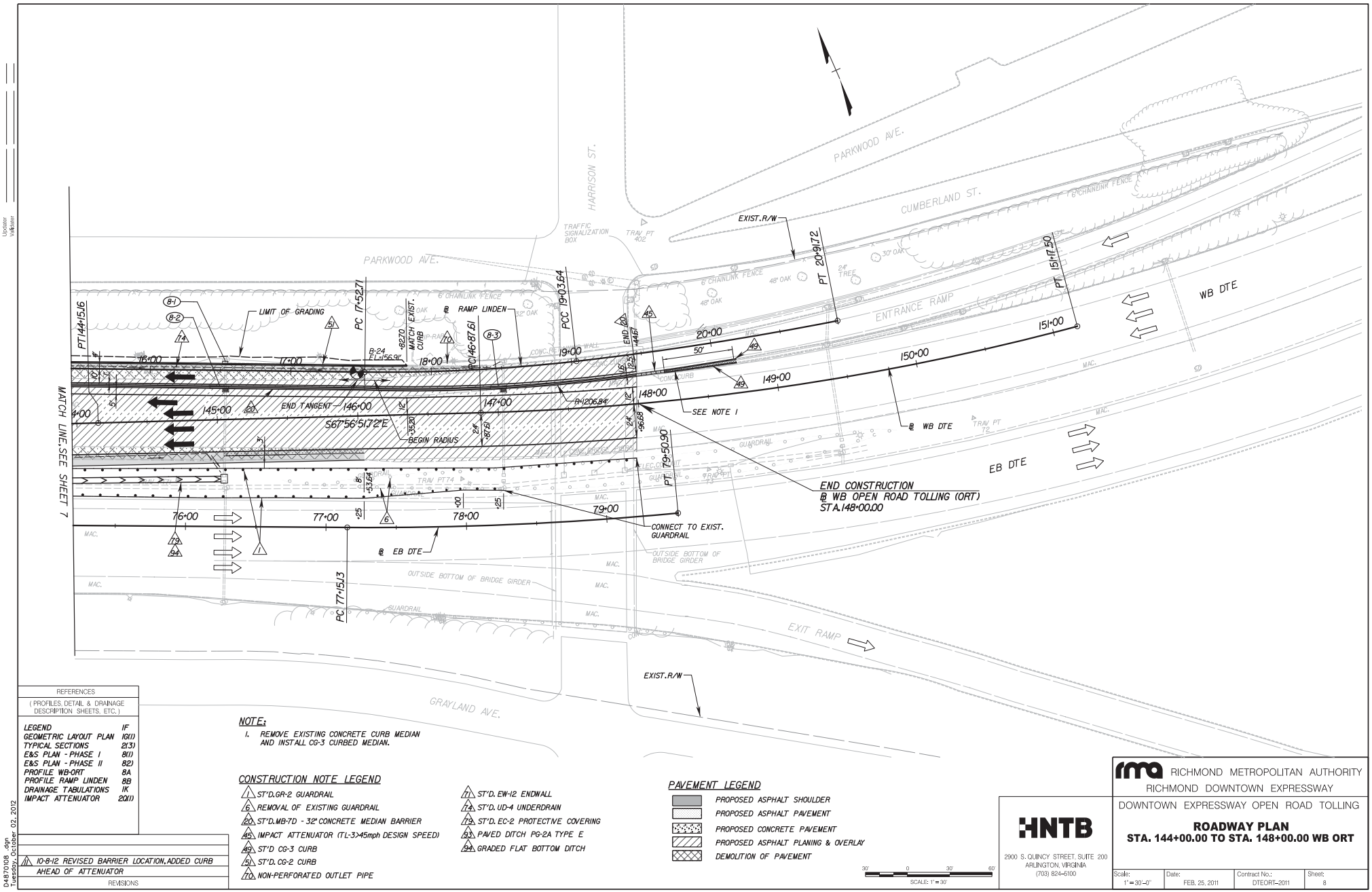
RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

ROADWAY PLAN
STA. 135+00.00 TO STA. 144+00.00 WB ORT

Scale:	Date:	Contract No.:	Sheet:
1" = 30'-0"	FEB. 25, 2011	DTEORT-2011	7



NOTE:

1. REMOVE EXISTING CONCRETE CURB MEDIAN AND INSTALL CG-3 CURBED MEDIAN.

CONSTRUCTION NOTE LEGEND

- 1 ST'D. GR-2 GUARDRAIL
- 6 REMOVAL OF EXISTING GUARDRAIL
- 20 ST'D. MB-7D - 32" CONCRETE MEDIAN BARRIER
- 45 IMPACT ATTENUATOR (TL-3) 45mph DESIGN SPEED)
- 49 ST'D CG-3 CURB
- 51 ST'D. CG-2 CURB
- 70 NON-PERFORATED OUTLET PIPE
- 71 ST'D. EW-12 ENDWALL
- 74 ST'D. UD-4 UNDERDRAIN
- 79 ST'D. EC-2 PROTECTIVE COVERING
- 93 PAVED DITCH PG-2A TYPE E
- 94 GRADED FLAT BOTTOM DITCH

PAVEMENT LEGEND

- PROPOSED ASPHALT SHOULDER
- PROPOSED ASPHALT PAVEMENT
- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PLANING & OVERLAY
- DEMOLITION OF PAVEMENT

SCALE: 1" = 30'

REFERENCES (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)	
LEGEND	1F
GEOMETRIC LAYOUT PLAN	1G(1)
TYPICAL SECTIONS	2(3)
E&S PLAN - PHASE I	8(1)
E&S PLAN - PHASE II	8(2)
PROFILE WB-ORT	8A
PROFILE RAMP LINDEN	8B
DRAINAGE TABULATIONS	1K
IMPACT ATTENUATOR	2Q(1)

REVISIONS
10-8-12 REVISED BARRIER LOCATION, ADDED CURB AHEAD OF ATTENUATOR

Level1 Check Print Stamp
Name(Print) Signature Date
Originator
Checker
Backchecker
Updater
Validater

D4870108 .dgn
Tuesday, October 02, 2012

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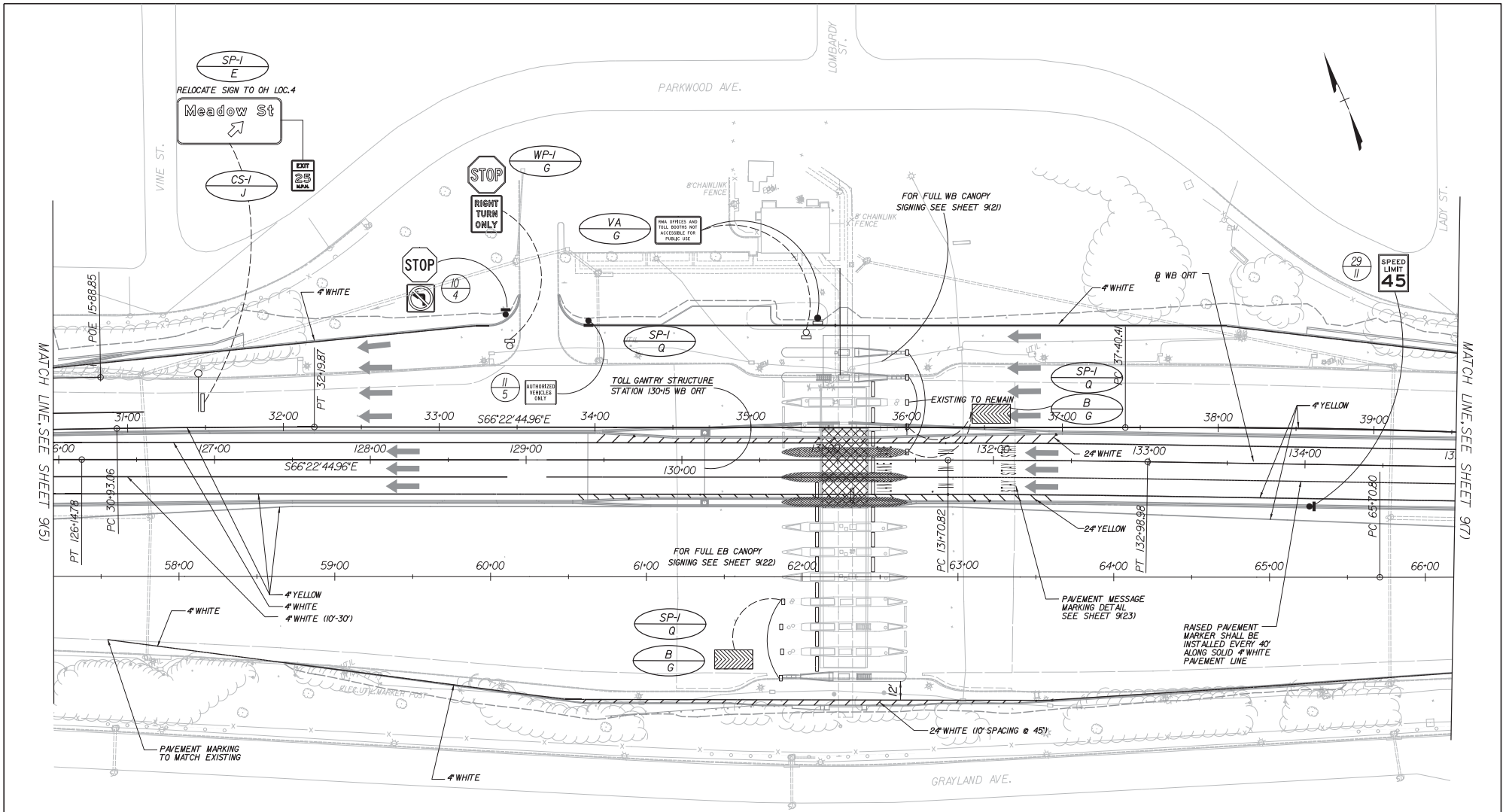
RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY
DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

ROADWAY PLAN
STA. 144+00.00 TO STA. 148+00.00 WB ORT

Scale:	Date:	Contract No.:	Sheet:
1" = 30'-0"	FEB. 25, 2011	DTEORT-2011	8



REVISIONS
10-8-12 REMOVED "MAINTAIN SPEED THROUGH TOLL" SIGNS MOUNTED TO GANTRY
11-30-11 REVISED LANE 57 STRIPING

SCALE: 1" = 30'

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RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY
DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

SIGNING & PAVEMENT MARKING PLAN
STA. 126+00.00 TO STA. 135+00.00 WB ORT

Scale:	Date:	Contract No.:	Sheet:
1" = 30'-0"	FEB. 25, 2011	DTEORT-2011	9(6)

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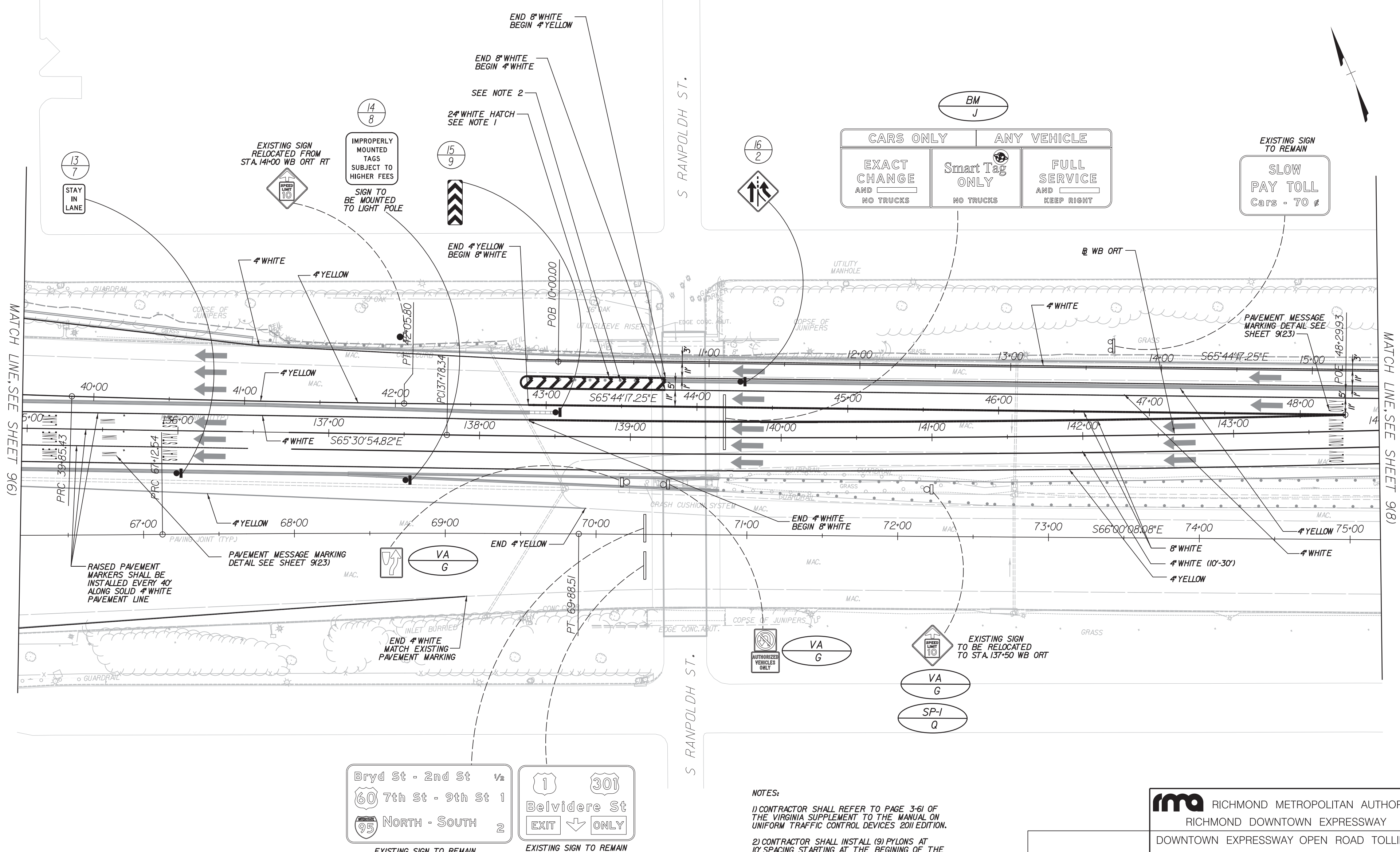
Wednesday, October 03, 2012



NOTES:

1) CONTRACTOR SHALL REFER TO PAGE 3-61 OF THE VIRGINIA SUPPLEMENT TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES 2011 EDITION.

2) CONTRACTOR SHALL INSTALL (9) PYLONS AT 10' SPACING STARTING AT THE BEGINING OF THE CONCRETE MEDIAN BARRIER

30' 0 30' 60'
SCALE: 1" = 30'

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RMA RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY
DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

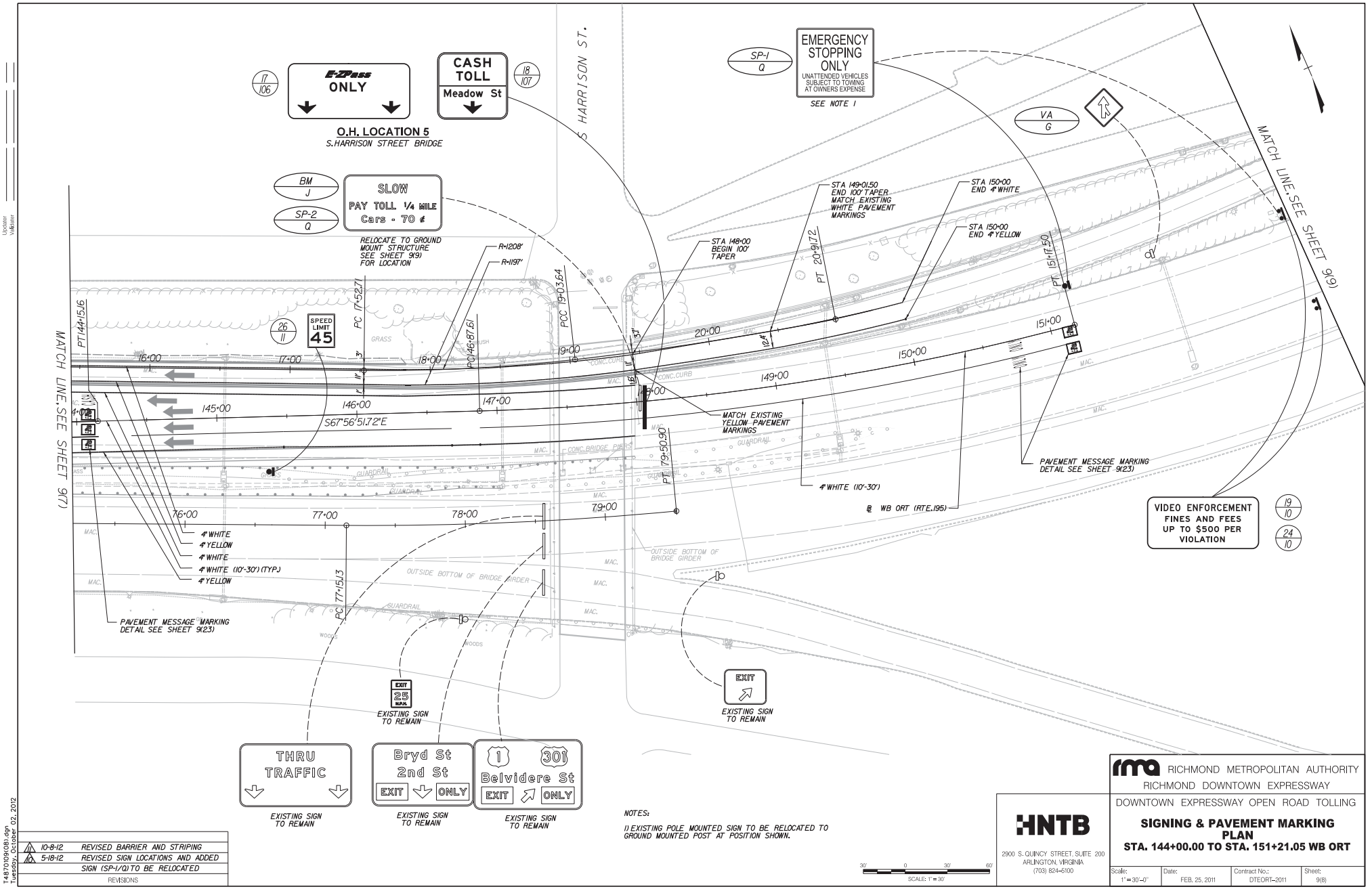
SIGNING & PAVEMENT MARKING PLAN
STA. 135+00.00 TO STA. 144+00.00 WB ORT

Scale:	Date:	Contract No.:	Sheet:
1" = 30'-0"	FEB. 25, 2011	DTEORT-2011	9(7)

1	10-8-12	REVISED BARRIER RAMP LINDON ADDED HATCH
REVISIONS		

Level 1 Check Print Stamp
Originator / Checker / Backchecker / Updater / Validater — Name(Print) — Signature — Date

T48710(07).dgn
Tuesday, October 02, 2012



REVISIONS	
10-8-12	REVISED BARRIER AND STRIPING
5-18-12	REVISED SIGN LOCATIONS AND ADDED SIGN (SP-1/Q) TO BE RELOCATED

RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

SIGNING & PAVEMENT MARKING PLAN
STA. 144+00.00 TO STA. 151+21.05 WB ORT

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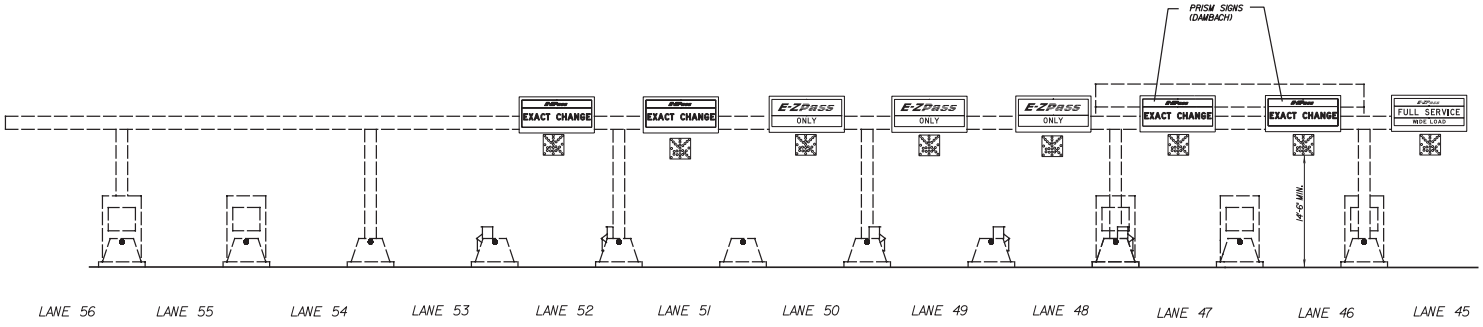
Scale:	Date:	Contract No.:	Sheet:
1" = 30'-0"	FEB. 25, 2011	DTEORT-2011	9(8)

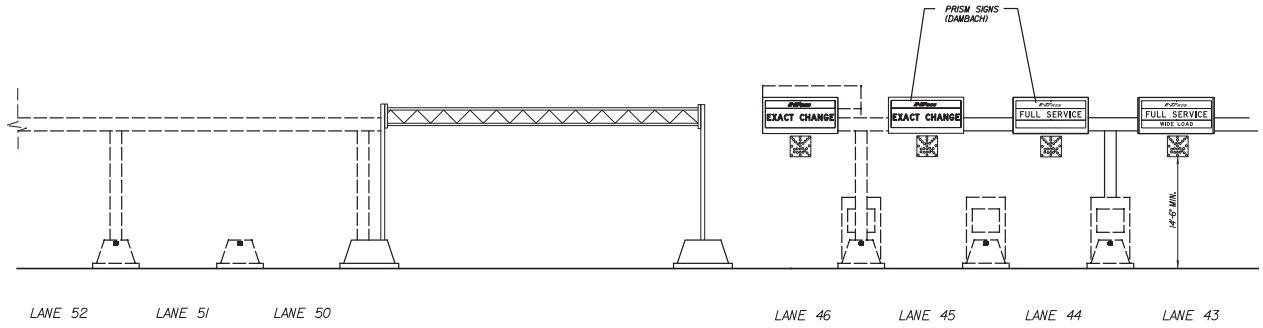
T487019(08).dgn
Tuesday, October 02, 2012

Level1 Check Print Stamp
Name(Print) Signature Date
Originator
Checker
Backchecker
Updater
Validater

EXISTING CANOPY SIGNS AND LANE CONTROL SIGNALS SHALL BE RELOCATED, REMOVED AND SALVAGED IN ACCORDANCE WITH MAINTENANCE OF TRAFFIC PLAN PHASING SHEETS IH(1) THRU IH(19). PAYMENT FOR INTERMEDIATE RELOCATIONS SHALL BE INCLUDED IN THE TOLL PLAZA ELECTRICAL WORK PAY ITEM



WB EXISTING TOLL PLAZA



WB PROPOSED TOLL PLAZA

T487019(21).dgn
Tuesday, March 15, 2011

REVISIONS

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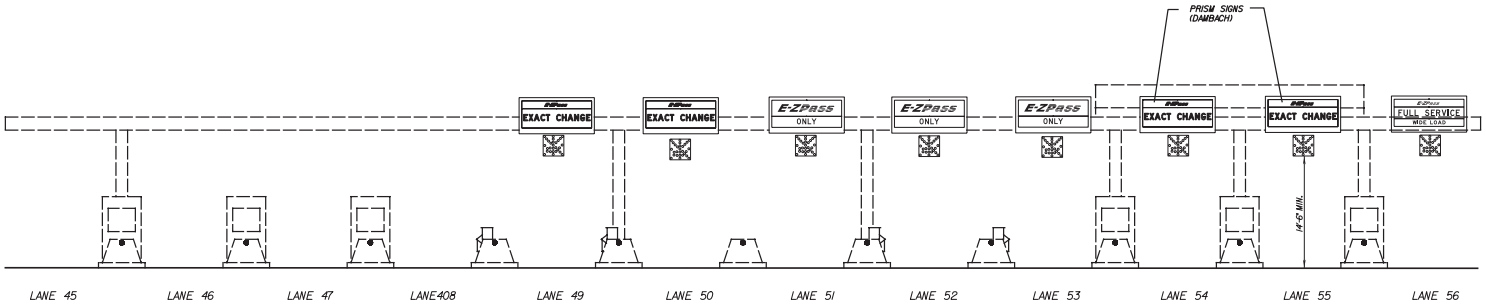
RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

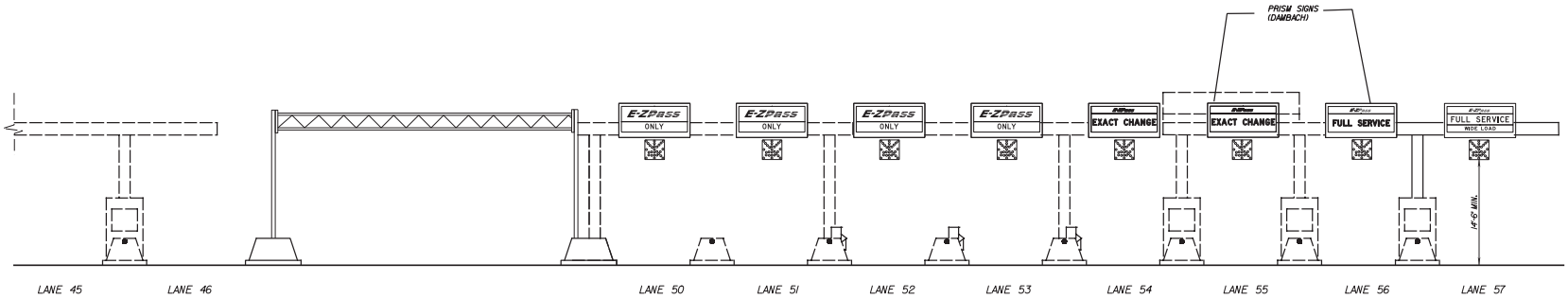
SIGNING & PAVEMENT MARKING
PLAZA CANOPY SIGN ELEVATIONS
WESTBOUND

Scale:	Date:	Contract No.:	Sheet:
NONE	FEB. 25, 2011	DTEORT-2011	9(21)

EXISTING CANOPY SIGNS AND LANE CONTROL SIGNALS SHALL BE RELOCATED, REMOVED AND SALVAGED IN ACCORDANCE WITH MAINTENANCE OF TRAFFIC PLAN PHASING (SHEETS IH(I) THRU IH(I9). PAYMENT FOR INTERMEDIATE RELOCATIONS SHALL BE INCLUDED IN THE TOLL PLAZA ELECTRICAL WORK PAY ITEM.



EB EXISTING TOLL PLAZA



EB PROPOSED TOLL PLAZA

T487019(221.dgn
Tuesday, March 15, 2011

REVISIONS

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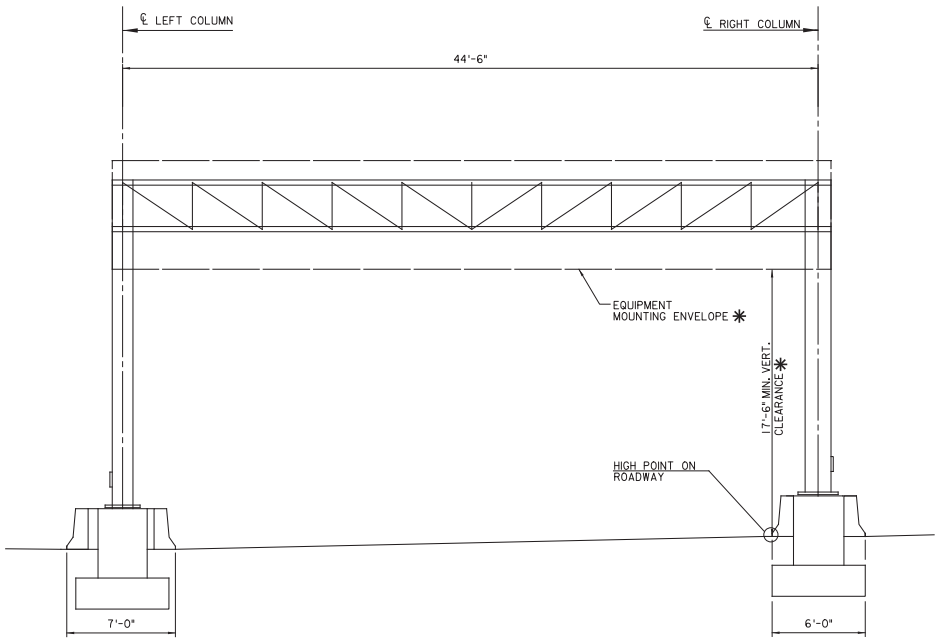
RICHMOND DOWNTOWN EXPRESSWAY

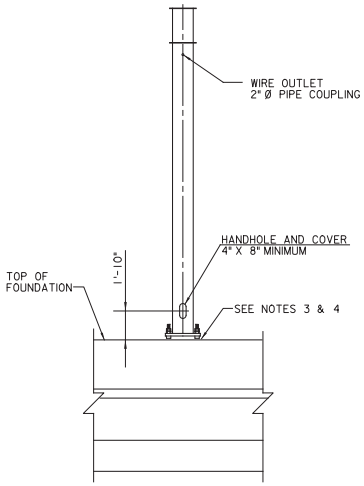
DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

SIGNING & PAVEMENT MARKING
PLAZA CANOPY SIGNING ELEVATIONS
EASTBOUND

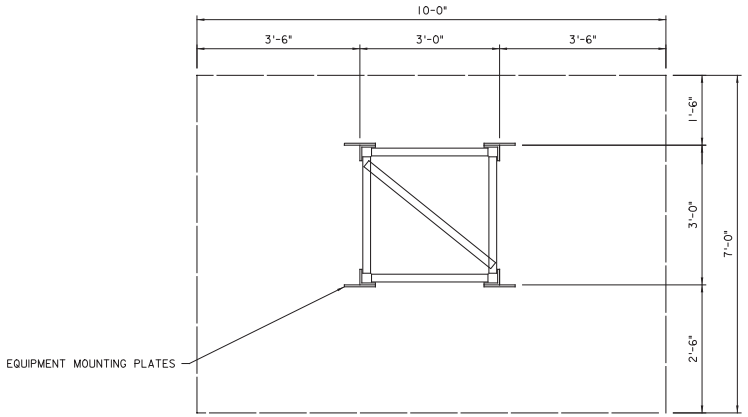
Scale:	Date:	Contract No.:	Sheet:
NONE	FEB. 25, 2011	DTEORT-2011	9(22)



TYPICAL GANTRY STRUCTURE ELEVATION
(LOOKING EAST)
SCALE: 1/4" = 1'-0"



END VIEW
SCALE: 1/4" = 1'-0"



TYPICAL SECTION
EQUIPMENT MOUNTING ENVELOPE ✱
SCALE: 3/4" = 1'-0"

NOTE:
THE EQUIPMENT MOUNTING PLATES SHALL BE INCLUDED WITH THE GANTRY. THE CONTRACTOR SHALL COORDINATE SIZE, NUMBER AND LOCATION OF PLATES WITH THE TOLL INTEGRATOR PRIOR TO GANTRY FABRICATION. THE TOLL INTEGRATOR IS RESPONSIBLE FOR INSTALLATION OF TOLL EQUIPMENT TO THE PLATES INCLUDING ANY OTHER SUPPORT BRACKETS OR MEMBERS REQUIRED.

✱ NOTE: THE EQUIPMENT MOUNTING ENVELOPE AND VERTICAL CLEARANCE FOR THE GANTRY SHALL BE CONFIRMED BY THE ENGINEER AND OWNER'S SELECTED TOLL INTEGRATOR.

OVERHEAD TOLL GANTRY NOTES

GENERAL

1. ALL DIMENSIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL DETERMINE ALL SPAN LENGTHS, END FRAME HEIGHTS, COLUMN HEIGHTS AND ROADWAY DIMENSIONS REQUIRED TO INSTALL THE STRUCTURE.
2. THE CONTRACTOR SHALL COORDINATE THE FOUNDATION DESIGN WITH ALL OTHER EXISTING AND PROPOSED WORK IN THE VICINITY OF THE GANTRY.
3. THE MAXIMUM SPACE BETWEEN THE BOTTOM OF THE BASE PLATE AND THE TOP OF THE FOUNDATION SHALL BE NO MORE THAN THE DIAMETER OF THE ANCHOR BOLT PLUS ONE INCH.
4. NO MORTAR, GROUT, OR CONCRETE SHALL BE PLACED BETWEEN BOTTOM OF BASE PLATE AND TOP OF PEDESTAL.
5. FOUNDATION RECOMMENDATIONS ARE PROVIDED IN SECTION 5.3.4 OF THE FINAL GEOTECHNICAL REPORT BY FROEHLING & ROBERTSON DATED NOVEMBER 18, 2010.

DESIGN

ALL DESIGN AND DETAILS OF CONSTRUCTION SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING:

A. 2002 (17TH EDITION) AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, WITH INTERIMS THROUGH 2004

B. 2009 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS

LIVE LOAD: THE WIND LOAD SHALL BE CALCULATED USING AN IMPORTANCE FACTOR (Ip) = 1.0

DEAD LOAD:
A. 10 PSF APPLIED OVER THE ENTIRE AREA OF STRUCTURE IN ADDITION TO THE SELF WEIGHT OF THE STRUCTURE.

B. A SINGLE 200 LB LOAD APPLIED TO ANY AND ALL NODES, CHORDS AND CONNECTIONS ON THE STRUCTURE.

CAMBER: THE OVERHEAD TOLLING GANTRY SHALL HAVE A RESIDUAL UPWARD CAMBER OF SPAN/1000.

MATERIALS

STRUCTURAL STEEL:	
HSS SHAPES & TUBING	ASTM A500 GRADE B
WIDE FLANGE SHAPES	ASTM A709
ALL OTHER SHAPES AND PLATES	ASTM A36 MIN.
CONCRETE:	
CONCRETE	F'c = 3,000 PSI
REINFORCING STEEL	ASTM A615 GRADE 60
BOLTS:	
HIGH STRENGTH BOLTS	ASTM A325
ANCHOR BOLTS	ASTM F1554

ALL STEEL ITEMS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 OR A153

WELDING

WELDING AND WELDING INSPECTION FOR STRUCTURES SHALL CONFORM TO THE CURRENT EDITIONS OF THE ANSI/AASHTO/AWS D1.5-02 BRIDGE WELDING CODE AND ANSI/AWS D1.1-02 STRUCTURAL WELDING CODE. WELDING OF STRUCTURAL ALUMINUM, IF APPLICABLE, SHALL CONFORM TO AWS D1.2-03. E70XX LOW HYDROGEN ELECTRODES SHALL BE USED FOR STRUCTURAL STEEL WELDS. NO WELDING OF ALUMINUM SHALL BE PERMITTED.

BOLTED CONNECTIONS

HIGH STRENGTH BOLTS SHALL BE ASTM A325. THREADS SHALL BE EXCLUDED FROM THE SHEAR PLANE. UNLESS OTHERWISE NOTED, FIELD CONNECTIONS SHALL BE BOLTED USING HIGH STRENGTH BOLTS AND BOLT SIZE SHALL BE MIN. 3/4" DIAMETER. BUTT WELDS SHALL BE FULL (COMPLETE) PENETRATION WELDS. PROVIDE BACKUP PLATES AS REQUIRED.

DESIGN INTENT

THESE ARE DESIGN CRITERIA DOCUMENTS: PRELIMINARY PLANS NOT TO BE USED FOR CONSTRUCTION. THESE PLANS ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY, INTENDED TO ESTABLISH THE PROPOSED PROJECT'S DESIGN AND CONSTRUCTION INTENT QUALITY, AND CHARACTER. CONTRACTOR SHALL USE THESE PLANS IN ACCORDANCE WITH THE SPECIFICATIONS.

THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND DETAILING OF THE GANTRY STRUCTURE AND FOUNDATIONS. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER AND TOLL INTEGRATOR AS NECESSARY FOR REQUIRED EQUIPMENT LOCATIONS AND LOADING AND ANY DESIGN RESTRICTIONS OR REQUIREMENTS.

REVISIONS

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Tuesday, March 15, 2011

RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

SIGNING AND PAVEMENT MARKING TOLL GANTRY ELEVATION

HNTB
2900 S. QUINCY STREET, SUITE 200
ARLINGTON, VIRGINIA
(703) 824-5100

Scale:	Date:	Contract No.:	Sheet:
AS SHOWN	FEB. 25, 2011	DTEORT-2011	9(29)

GENERAL NOTES

1. VIRGINIA DEPARTMENT OT TRANSPORTATION 2007 ROAD AND BRIDGE SPECIFICATIONS,2008 ROAD AND BRIDGE STANDRADS, 2006 TRAFFIC ENGINEERING MANUAL,THE CONTRACT DOCUMENTS AND THE CONTRACT PLANS ARE THE GOVERNING PROVISIONS APPLICABLE TO THIS PROJECT.

2. THE LIGHTING DESIGN REFLECTED IN THESE DRAWINGS CONFORMS WITH I.E.S. DESIGN CRITERIA AND STANDARDS, AND VDOT'S REQUIREMENTS AS FOLLOWS:
   * MINIMUM ILLUMINANCE, 0.2 Fc
   * AVERAGE MAINTAINED ILLUMINANCE, 0.6-0.9 Fc ON THE MAINLINE, 1.0 Fc ON RAMPS AND AT BIFURCATION POINTS
   * UNIFORMITY RATIO (AVERAGE TO MINIMUM), SHALL BE BETWEEN 4:1 AND 3:1 OR LESS
   * LIGHT LOSS FACTOR: 0.65
   * VEILING LUMINANCE RATIO, LESS THAN 0.30

3. LIGHT POLE LENGTH RANGES AS SHOWN ON THE PLANS ARE APPROXIMATE; ACTUAL LENGTHS SHALL BE DETERMINED BY THE CONTRACTOR IN THE FIELD AS REQUIRED TO ACHIEVE THE REQUIRED LUMINAIRE MOUNTING HEIGHT, BEFORE ORDERING ANY POLES.

4. JUNCTION BOXES SHALL CONFORM WITH VDOT ST'D JB R1 OR JB R2 AS SHOWN.

5. CONDUIT LOCATIONS AS SHOWN ARE DIAGRAMMATIC. FIELD ADJUSTMENTS SHALL BE MADE AS REQUIRED TO STAY WITHIN THE LIMITS OF CONSTRUCTION, OUT OF DITCH LINES, AWAY FROM GUARDRAIL AND FENCE POSTS, AND TO CLEAR OBSTRUCTIONS.

6. STATION AND OFFSET REFERENCES TO LIGHT POLE FOUNDATIONS ARE BASED ON CONSTRUCTION BASE LINE.

7. MOUNTING HEIGHTS SHOWN ON THE PLANS SHALL BE ADHERED TO WITHIN A TOLERANCE OF 1 Ft, AND SHALL IN NO CASE BE LESS THAN THE MOUNTING HEIGHTS SHOWN.

8. ALL NON-DIRECTIONALLY DRILLED UNDERGROUND CONDUITS SHALL BE INSTALLED IN ACCORDANCE WITH VDOT ST'D ECI-1.

9. CONDUCTOR CABLES TERMINATING IN BOXES OR LIGHT POLES SHALL BE TEST CAPPED AND HAVE A SLACK OF 3 FT PER CONDUCTOR.

10. 4 *6 AWG CONDUCTORS SHALL BE USED BETWEEN ADJACENT JUNCTION BOX AND SIGN STRUCTURE FOR SIGN LIGHTING.

11. 150 WATT H.P.S. LUMINAIRES SHALL BE USED FOR SIGN LIGHTING.

12. BEFORE CONNECTING SIGN LUMINAIRES, THE CONTRACTOR SHALL MAKE SURE THAT BALLAST TAPS ARE SELECTED FOR PROPER VOLTAGE OPERATION.

13. THE EQUIPMENT GROUNDING CONDUCTOR (EGC) IS INCIDENTAL TO THE COST OF NEW CONDUIT. THE EGC SHALL BE THE SAME SIZE AS THE LARGEST POWER CONDUCTOR.

14. ALL ELECTRICAL SERVICE ENCLOSURES SHALL MEET NEMA 3R SPECIFICATIONS AND REQUIREMENTS

15. INSTALLATION OF ELECTRICAL SERVICES SHALL BE COORDINATED WITH DOMINION VIRGINIA POWER BY THE CONTRACTOR.

16. ALL LIGHTING POLES SHALL BE PROVIDED WITH NON-CORROSIVE, METALLIC IDENTIFICATION TAGS, SIZED AS REQUIRED, BEARING THE POLE OWNER AND MAINTAINER, RMA/VDOT, THE GAUGE AND LENGTH OF THE LIGHT POLE, THE CIRCUIT NUMBER, CIRCUIT PHASE, 6 DIGIT POLE NUMBERS: FIRST 3 DIGITS OF THE POLE NUMBER WILL DESIGNATE THE SERVICE PANEL NUMBER AND THE LAST 3 DIGITS WILL DESIGNATE THE NUMBER OF THE POLE CONNECTED TO EACH SERVICE PANEL NUMBER IN THIS FORMAT:

```
                 RMA/VDOT
CIRCUIT NUMBER - 1/A/001001 - 6 DIGIT POLE NUMBER
                  |
                  |__________ CIRCUIT PHASE
                   SP #001
                      |
                      |______ 3 DIGIT SERVICE PANEL NUMBER

                   3GA. /50FT.- LIGHT POLE LENGTH
                    |
                    |______ LIGHT POLE GAUGE
```

17. LIGHT POLE NUMBERS SHALL BE DETERMINED BY THE CONTRACTOR IN THE FIELD USING THE FOLLOWING GUIDELINES:
    a) LIGHT POLE NUMBER MUST BE ASSIGNED IN CHRONOLOGICAL ORDER TO CORRESPOND WITH THE DIRECTION OF VEHICLE APPROACH.
    b) THE FIRST LIGHT POLE OF EACH SERVICE PANEL SHALL BE NUMBERED 001 AND CONTINUE SEQUENTIALLY THROUGHOUT THE LIGHT POLE CHAIN(S) UNTIL THE LAST LIGHT POLE CONNECTED TO THE SAME SERVICE PANEL IS NUMBERED.
    c) LIGHT POLES ON RAMPS SHALL BE NUMBERED CHRONOLOGICALLY AS PART OF THE MAINLINE LIGHT POLES IN THE DIRECTION OF VEHICLE APPROACH.

18. THE CONTRACTOR SHALL CONTACT NRO MAINTENANCE MANAGEMENT, XXX FOR MAINTENANCE CONCERNS. LIGHT POLE AND SERVICE IDENTIFICATION TAGS/DECALS, SERVICE INSPECTIONS, FINAL FIELD INSPECTION, AND VDOT UTILITY IDENTIFICATION AND MARKING.

19. ALL UTILITIES SHALL BE LOCATED AND MARKED PRIOR TO INITIATION OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING MISS UTILITY AND SCHEDULING THE LOCATION OF UNDERGROUND UTILITIES. EXISTING RMA CONDUITS AND CABLES SHALL ALSO BE LOCATED AND MARKED.

20. ALL CONDUCTORS IN JUNCTION BOXES, POLES AND EQUIPMENT ENCLOSURES SHALL BE PROVIDED WITH INDIVIDUAL BRASS TAGS, DIE STAMPED WITH SERVICE PANEL NUMBER, PHASE AND CIRCUIT IDENTIFICATIONS. CONDUCTORS SHALL BE NEATLY ARRANGED AND SUPPORTED ON CABLE RACKS.

21. CONDUITS ENTERING JUNCTION BOXES SHALL BE INSTALLED AS SHOWN ON THE PLANS. CONDUITS SHALL EXTEND 2" MIN TO 3" MAX. BEYOND THE INSIDE WALL OF THE JUNCTION BOXES. ALL CONDUITS INSTALLED INSIDE JUNCTION BOXES SHALL BE LEVELED WITH THE FRAME AND COVER, AND SHALL BE SQUARE TO THE INSIDE WALL OF THE JUNCTION BOXES.

22. OFFSET AND CONVENTIONAL LIGHTING POLES SHALL BE ALUMINUM OR STEEL.

23. ALL LIGHTING POLES SHALL BE EQUIPPED WITH ANCHOR BOLT COVERS.

24. LIGHTING POLES THAT ARE PLACED BEHIND GUARDRAILS, RETAINING WALLS AND/OR MEDIAN BARRIERS SHALL BE INSTALLED ON NON-FRANGIBLE TRANSFORMER BASES (NF) AS SHOWN ON THE PLANS.

25. LIGHTS POLES THAT ARE NOT PROTECTED BY GUARDRAIL, RETAINING WALLS OR MEDIAN BARRIERS SHALL BE INSTALLED ON FRANGIBLE TRANSFORMER BASES (F) AS SHOWN ON THE PLANS.

26. LIGHT POLES INSTALLED ON BARRIERS OR WALLS SHALL BE INSTALLED WITHOUT TRANSFORMER BASES AS SHOWN ON THE PLANS.

27. LIGHT POLE FOUNDATIONS THAT SUPPORT FRANGIBLE TRANSFORMER BASES SHALL BE INSTALLED SUCH THAT NO PORTION OF THE FOUNDATION EXTENDS MORE THAN 4" ABOVE THE FINAL GRADE.

28. TRANSFORMER BASES SHALL INCLUDE BOLT COVERS.

29. TRANSFORMER BASE HEIGHTS SHALL BE CALCULATED INTO THE TOTAL LIGHT POLE LENGTH TO ACHIEVE THE REQUIRED LIGHT FIXTURE MOUNTING HEIGHT.

30. TRANSFORMER BASES SHALL BE EQUIPPED WITH HINGED COVERS THAT INCLUDE A LOCKING MECHANISM AND SHALL COMPLY WITH VDOT ST'D LP-2.

31. NON-WALL MOUNTED OFFSET AND CONVENTIONAL LIGHTING POLE FOUNDATIONS SHALL BE IN ACCORDANCE WITH VDOT ST'D. LF-1. TYPE A, AS INDICATED ON THE PLANS.

32. CONDUITS, JUNCTION CHAMBERS, AND ANCHOR BOLTS SPECIFIED TO BE INSTALLED INTO BARRIERS AND/OR WALLS ARE INCIDENTAL TO THE COST OF THE BARRIERS AND/OR WALLS AND SHALL BE COORDINATED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

33. ALL PROPOSED EMPTY CONDUITS SHALL HAVE A PULL-LINE INSTALLED. TOTAL COST ASSOCIATED WITH THE PULL LINE SHALL BE INCIDENTAL TO THE CONDUIT PAY ITEM.

34. REMOVAL AND SALVAGE OF LIGHT POLE SHALL INCLUDE LIGHT POLE, TRANSFORMER BASE, BRACKET ARM, LIGHT FIXTURE, FOUNDATION AND ASSOCIATED JUNCTION BOX.

T487010(02A).dgn
Tuesday, March 15, 2011

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RMA RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

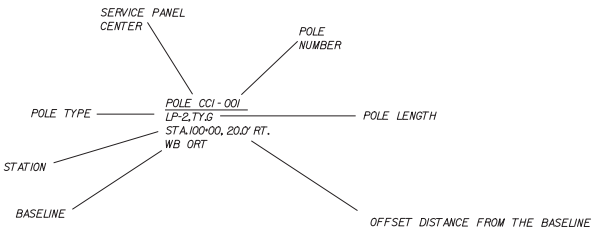
LIGHTING & ELECTRICAL DISTRIBUTION GENERAL NOTES

Scale:	Date:	Contract No.:	Sheet:
NONE	FEB. 25, 2011	DTEORT-2011	10(2A)

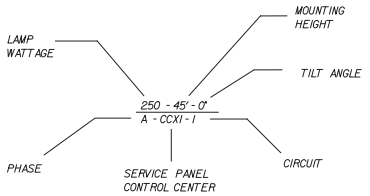
LEGEND	DESCRIPTION
	QUAD 400 WATT, MH, FORWARD THROW. FULL CUTOFF LUMINAIRES. 40 Ft MOUNTING HEIGHT ON NEW LIGHT POLE ON BARRIER. SEE SHEET 10(16) FOR ALUMINUM MOUNTING BRACKETS.
	400 WATT, HPS, FORWARD THROW. CUTOFF LUMINAIRES. 55 Ft MOUNTING HEIGHT WITH 7.5Ft ARM ON NEW LIGHT POLE WITH CONCRETE FOUNDATION LF-I SEE SHEET 10(16) FOR ALUMINUM ARM DETAILS.
	250 WATT, HPS, FORWARD THROW. CUTOFF LUMINAIRES, 40 Ft MOUNTING HEIGHT ON NEW LIGHT POLE WITH NON-FRANGIBLE TRANSFORMER BASE AND CONCRETE FOUNDATION LF-I
F	250 WATT, HPS, FORWARD THROW. CUTOFF LUMINAIRES, 40 Ft MOUNTING HEIGHT ON NEW LIGHT POLE WITH FRANGIBLE TRANSFORMER BASE AND CONCRETE FOUNDATION LF-I
	70 WATT, HPS, WALLPACK TYPE IV, UNDERBRIDGE LIGHTING LUMINAIRES
	150 WATT, HPS, WALLPACK TYPE IV, UNDERBRIDGE LIGHTING LUMINAIRES
	REMOVE AND SALVAGE EXISTING LIGHT POLE
	EXISTING LIGHT POLE WITH NEW ELECTRICAL CONNECTION
JB-RI	JUNCTION BOX JB-RI
	EXPOSED 6"X6"X6" WALL/GIRDER SURFACE MOUNTED NEMA 3R JUNCTION BOX
	JUNCTION CHAMBER (8"H x 8"W x 8"D) INSIDE BARRIER
	JUNCTION CHAMBER (8"H x 8"W x 12"D) INSIDE BARRIER
	TEE JUNCTION BOX
	EXISTING JUNCTION BOX TO BE MODIFIED
	EXISTING SERVICE PANEL/CONTROL CENTER
	GALVANIZED RIGID STEEL CONDUIT RISER BETWEEN JUNCTION BOX EMBEDDED IN WALL/BARRIER OR SURFACE MOUNTED AND JUNCTION BOX INSTALLED IN GROUND
A B C	OVERHEAD SIGN STRUCTURE - LUMINAIRE PHASE CONNECTIONS
A C	BRIDGE MOUNTED SIGN STRUCTURE-LUMINAIRE PHASE CONNECTIONS

LEGEND	DESCRIPTION
	PROPOSED DIRECTIONALLY DRILLED CONDUIT (NUMBER AND SIZE OF CONDUITS PER PLAN SHEET CALLOUTS)
RL	PROPOSED ROADWAY LIGHTING CONDUIT
	PROPOSED CONDUIT IN BARRIER (NUMBER AND SIZE OF CONDUITS PER PLAN SHEET CALLOUTS)
	PROPOSED ONE 1" GALVANIZED RIGID STEEL (GRS) CONDUIT
	EXISTING CONDUIT

POLE DATA



OFFSET LUMINAIRE DATA



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RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

LIGHTING & ELECTRICAL DISTRIBUTION LEGEND

Scale:	Date:	Contract No.:	Sheet:
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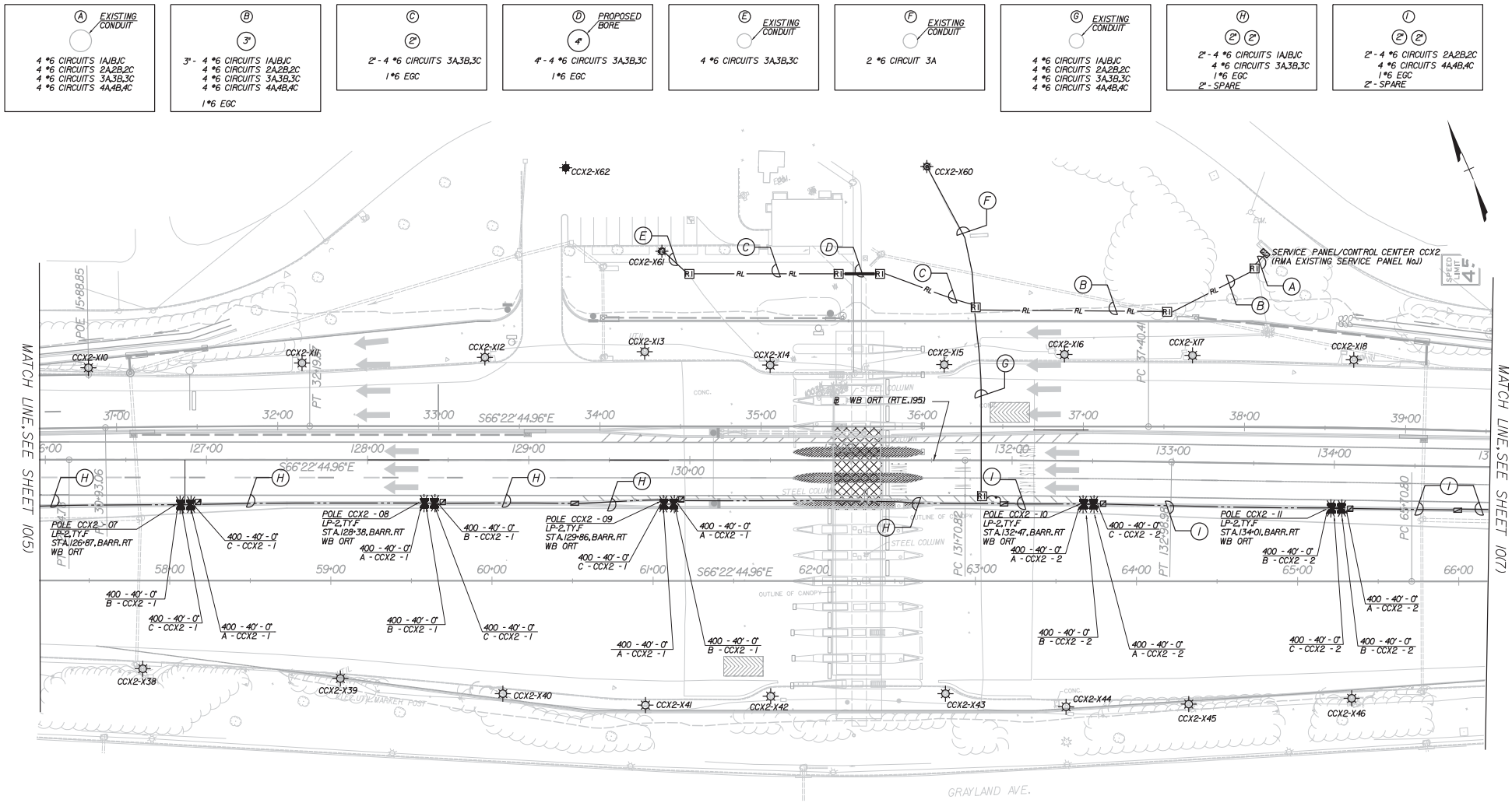

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RICHMOND METROPOLITAN AUTHORITY
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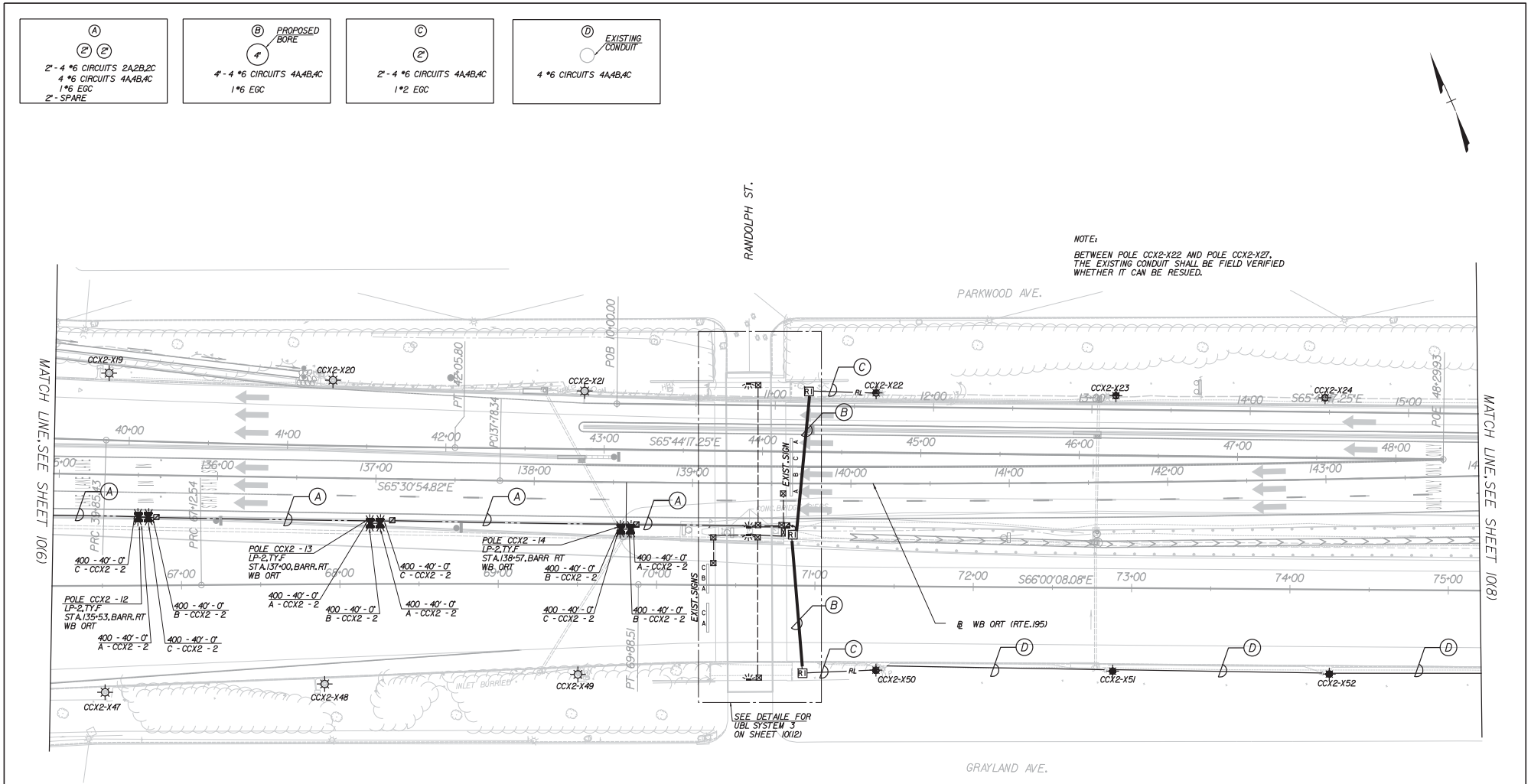
DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

LIGHTING & ELECTRICAL DISTRIBUTION PLANS
STA. 126+00.00 TO STA. 135+00.00 WB ORT

Scale:	Date:	Contract No.:	Sheet:
1" = 30'-0"	FEB. 25, 2011	DTEORT-2011	10(6)



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Tuesday, March 15, 2011

REVISIONS

RICHMOND METROPOLITAN AUTHORITY
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DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

LIGHTING & ELECTRICAL DISTRIBUTION PLANS
STA. 135+00.00 TO STA. 144+00.00 WB ORT

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30' 0 30' 60'
SCALE: 1" = 30'

Scale:	Date:	Contract No.:	Sheet:
1" = 30'-0"	FEB. 25, 2011	DTEORT-2011	10(7)

SERVICE PANEL / CONTROL CENTER NO.CCX1

(VDOT EXISTING SERVICE PANEL NO.XXX)

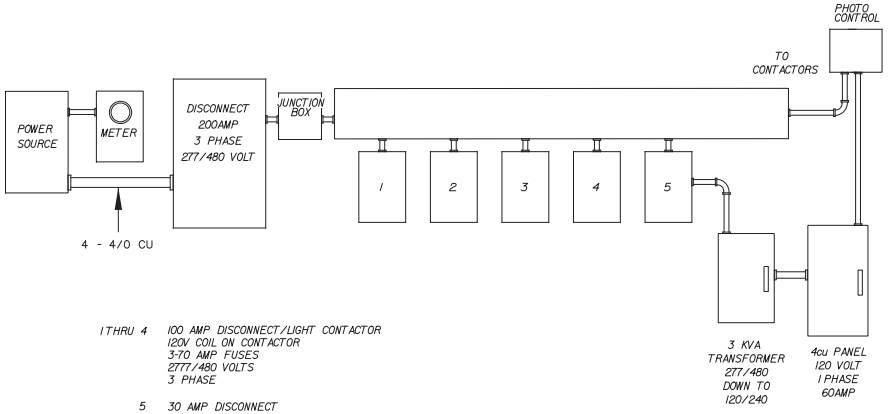
STANDARD	TYPE	VOLTAGE	SAFETY SWITCH		
			VOLTAGE	AMPERE RATING	FUSE
–	–	277/480	–	–	–

CCX1 DISTRIBUTION CENTER

AMPERE RATING		CIRCUIT NO.	CIRCUIT NO.	AMPERE RATING	
CONTACTOR	CIRCUIT BREAKER			CIRCUIT BREAKER	CONTACTOR
20 *	15 *	1	2		
20 *	15 *	3	4		
20 *	15 *	5	6		
		7	8		
		9	10		
		11	12		
		13	14		
		15	16		
		17	18		
		19	20		
		21	22		
		23	24		

*: PROPOSED CIRCUIT ARRANGEMENT TO MATCH THE EXISTING CIRCUIT.

VDOT EXISTING SERVICE PANEL ARRANGEMENT



1THRU 4 100 AMP DISCONNECT/LIGHT CONTACTOR
120V COIL ON CONTACTOR
3-70 AMP FUSES
2777/480 VOLTS
3 PHASE

5 30 AMP DISCONNECT
3-6 AMP FUSES
277/480VOLTS
3 PHASE

NOTE:

1. TRANSFORMER FEED BY #10 THNN ON 6AMP FUSES.
2. LIGHTING CONTACTORS ARE BUILT-IN TO DISCONNECTS 1THRU 4.
3. DISCONNECTS FEED WITH 3#2 THNN CU AND 1#8 CU.

RMA EXISTING SERVICE PANEL NO.1 ARRANGEMENT

INFO PROVIDED BY HARRIS & SON ELECTRIC CO. TEL:(804) 254-3507

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RICHMOND METROPOLITAN AUTHORITY
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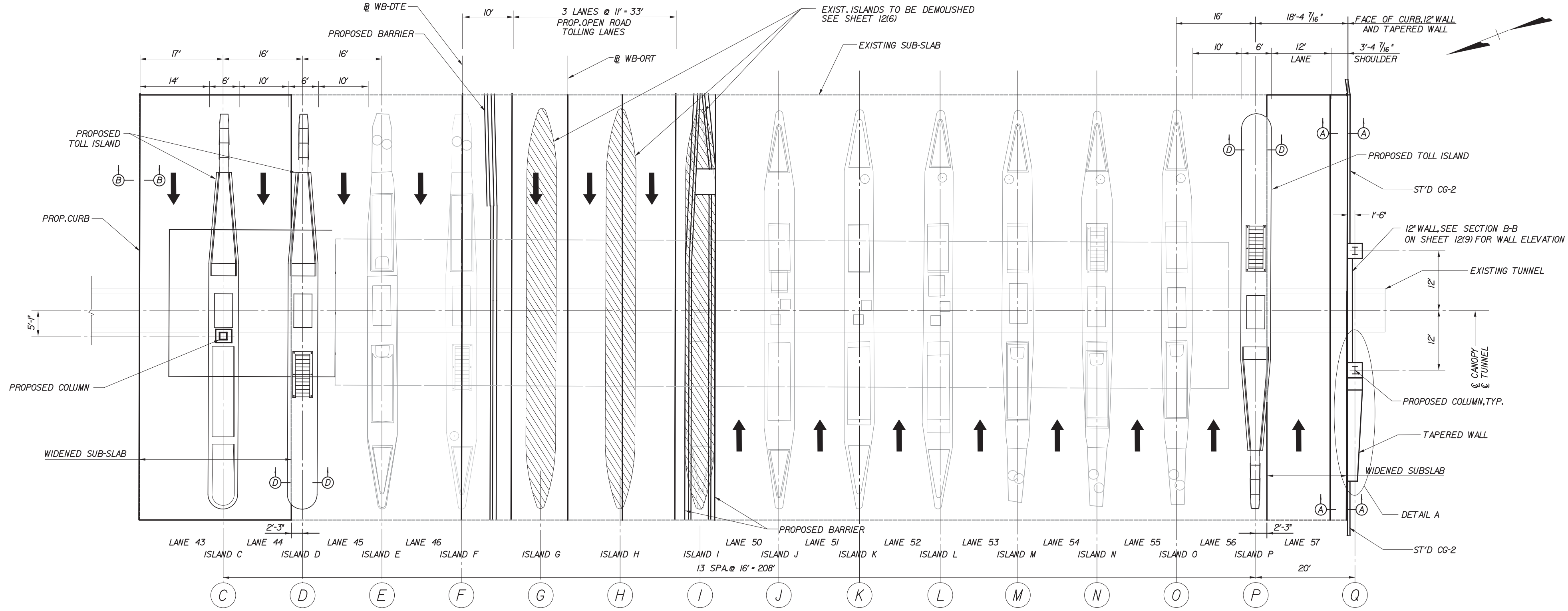
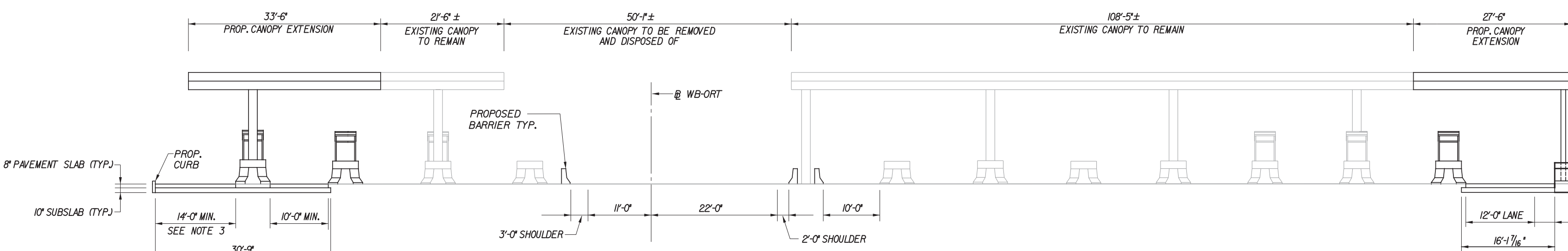
LIGHTING & ELECTRICAL DISTRIBUTION

SERVICE PANEL/CONTROL CENTER ARRANGEMENT

Scale:	Date:	Contract No.:	Sheet:
NONE	FEB. 25, 2011	DTEORT-2011	10(14)



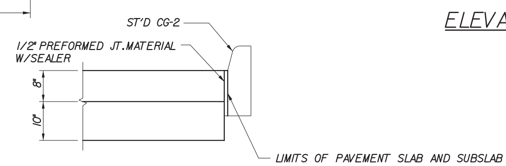
PLAN OF TOLL PLAZA
SCALE: 1"=10'-0"



ELEVATION OF TOLL PLAZA (LOOKING EAST)
SCALE: 1"=10'-0"

NOTES:

1. FOR SECTION B-B, SEE DETAIL 5 ON SHEET 2(2)
2. FOR SECTION D-D, SEE SHEET 12(6)
3. PAVEMENT SLAB SHALL BE PLACED TO LIMITS OF PROPOSED TOLL ISLANDS. FOR LIMITS OF SUBSLAB AND PAVEMENT SLAB NOT SHOWN HERE, SEE SHEETS 12(2) AND 12(3).
4. FOR DETAIL A, SEE SHEET 12(5A)



SECTION A-A
SCALE: 1/2"=1'-0"

2	11-30-11	LN.57 REMOVED BARRIER AND ADDED WALLS AND CG-2
1	10-25-11	ADDED CONCRETE BARRIER ON TOP OF ISLAND C
REVISIONS		

B4870112(01).dgn
Thursday, December 01, 2011

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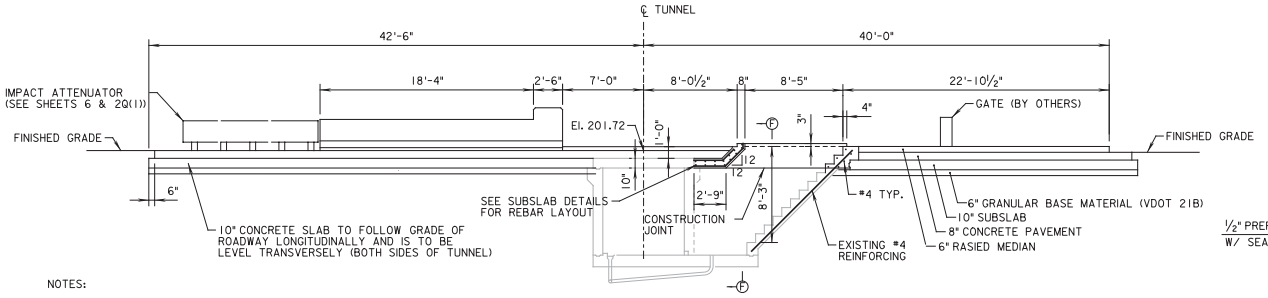
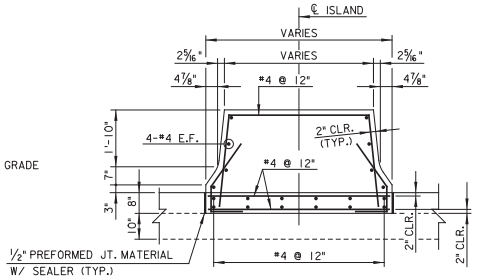
RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY
DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

TOLL PLAZA
PLAN AND ELEVATION

Scale:	Date:	Contract No.:	Sheet:
AS NOTED	FEB. 25, 2011	DTEORT-2011	12(1)



SECTION A-A
SCALE: 3/16" = 1'-0"



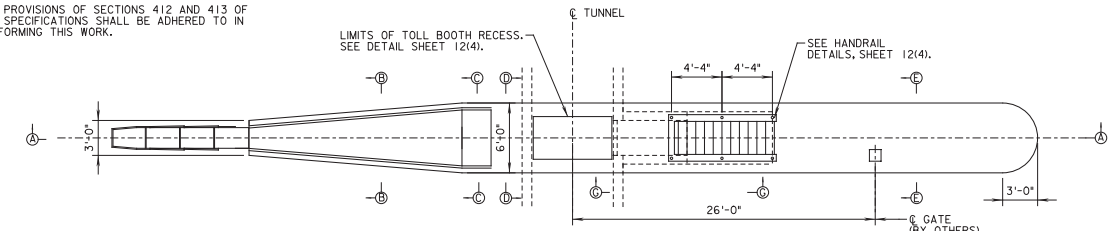
SECTION B-B
SCALE: ½" = 1'-0"

NOTES:

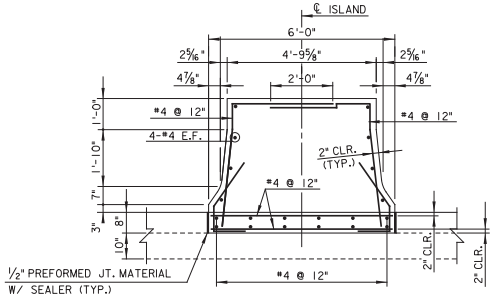
FOR 8" PAVEMENT AND 10" SUBSLAB DETAILS, SEE SHEET 12(4).

FOR DETAILS OF THE CONDUIT AND JUNCTION BOXES EMBEDDED IN THE ISLANDS, SEE TOLL PLAZA ELECTRICAL PLANS.

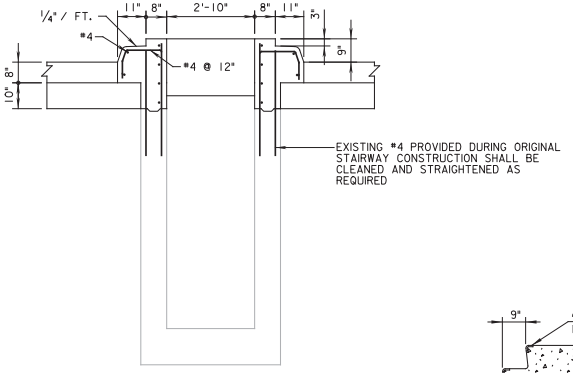
THE PROVISIONS OF SECTIONS 412 AND 413 OF THE SPECIFICATIONS SHALL BE ADHERED TO IN PERFORMING THIS WORK.



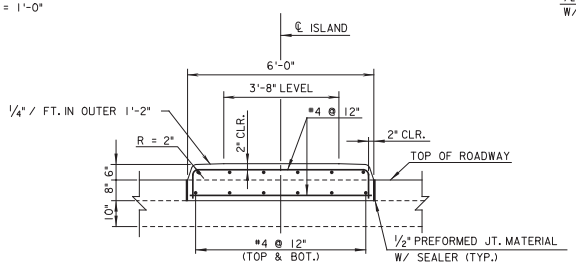
PLAN
SCALE: 3/16" = 1'-0"



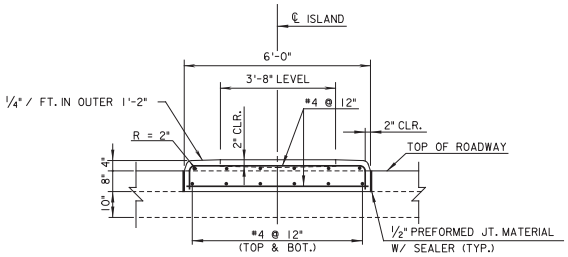
SECTION C-C
SCALE: ½" = 1'-0"



SECTION F-F
SCALE: ½" = 1'-0"

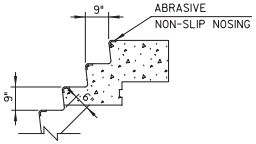


SECTION E-E
SCALE: ½" = 1'-0"

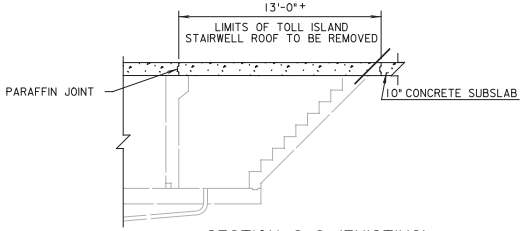


SECTION D-D
SCALE: ½" = 1'-0"

NOTE: FOR SECTION BELOW TOLL BOOTH, SEE TOLL BOOTH RECESS DETAIL, SHEET 12(4).



STEP DETAIL
NO SCALE



SECTION G-G (EXISTING)
SCALE: ¼" = 1'-0"

B487012(02).dgn
Tuesday, March 15, 2011

REVISIONS
-

RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

TOLL PLAZA
ISLAND D AND P DETAILS

HNTB
2900 S. QUINCY STREET, SUITE 200
ARLINGTON, VIRGINIA
(703) 824-5100

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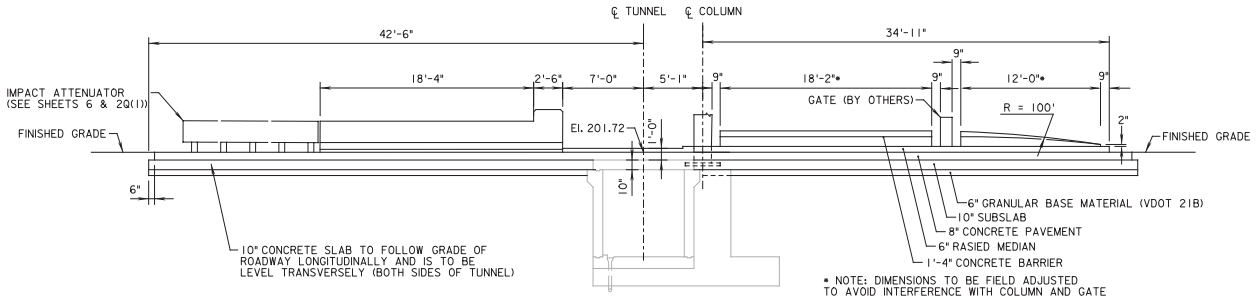
AS NOTED	FEB. 25, 2011	DTEORT-2011	12(2)



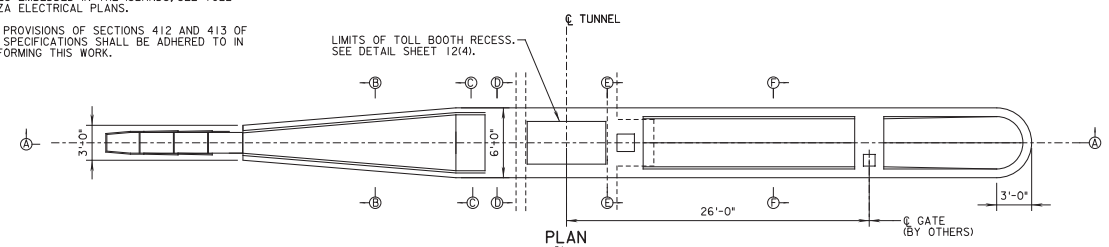
SECTION A-A
SCALE: 3/16" = 1'-0"

NOTES:

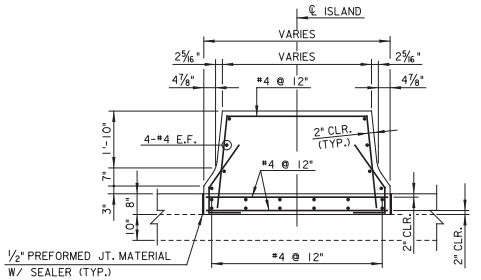
FOR 8" PAVEMENT AND 10" SUBSLAB DETAILS, SEE SHEET 12(4).

FOR DETAILS OF THE CONDUIT AND JUNCTION BOXES EMBEDDED IN THE ISLANDS, SEE TOLL PLAZA ELECTRICAL PLANS.

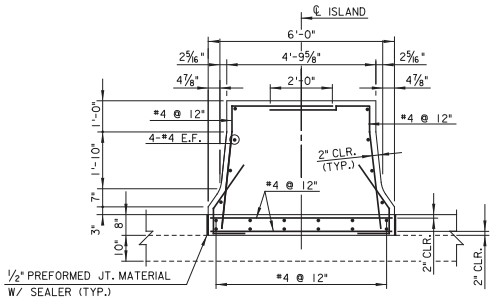
THE PROVISIONS OF SECTIONS 412 AND 413 OF THE SPECIFICATIONS SHALL BE ADHERED TO IN PERFORMING THIS WORK.



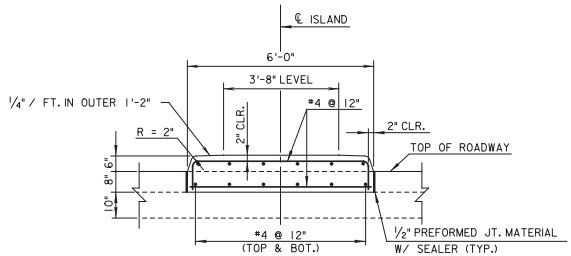
PLAN
SCALE: 3/16" = 1'-0"



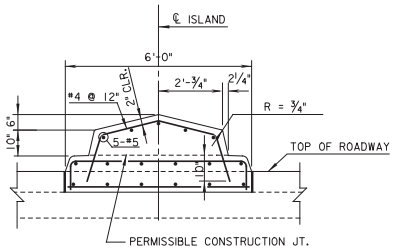
SECTION B-B
SCALE: 1/2" = 1'-0"



SECTION C-C
SCALE: 1/2" = 1'-0"

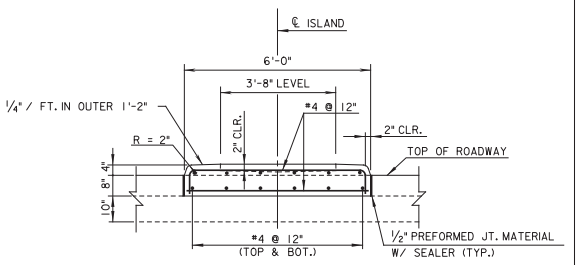


SECTION E-E
SCALE: 1/2" = 1'-0"



SECTION F-F
SCALE: 1/2" = 1'-0"

NOTE: FOR MEDIAN DIMENSIONS NOT LABELED SEE SECTION E-E



NOTE: FOR SECTION BELOW TOLL BOOTH, SEE TOLL BOOTH RECESS DETAIL, SHEET 12(4).

SECTION D-D
SCALE: 1/2" = 1'-0"

REVISIONS
4 10-25-11 ADDED CONCRETE BARRIER ON TOP OF MEDIAN
ADDED SECTION F-F

B487012(03).dgn
Monday, October 31, 2011

RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

TOLL PLAZA ISLAND C DETAILS

HNTB
2900 S. QUINCY STREET, SUITE 200
ARLINGTON, VIRGINIA
(703) 824-5100

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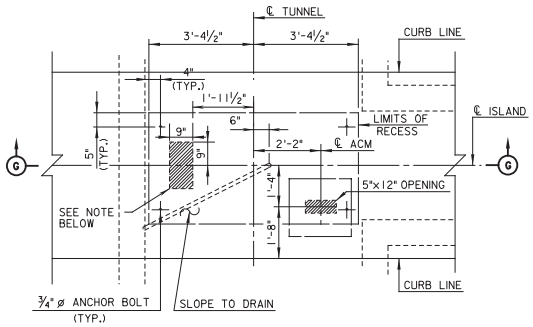
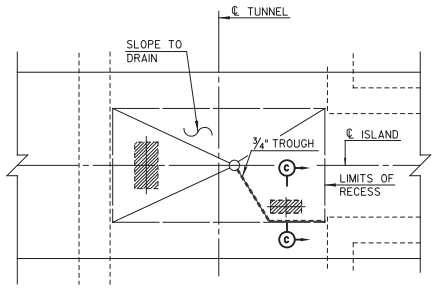


PLAN OF TOLL BOOTH RECESS

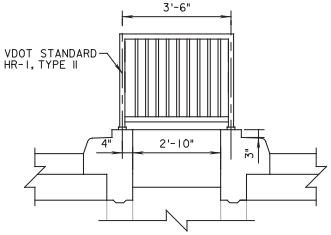
SCALE: ½" = 1'-0"

NOTE: 18" X 9" OPENING IN TUNNEL CEILING IS EXISTING. TOP 5" OF OPENING IS CAPPED WITH UNREINFORCED CONCRETE. CONTRACTOR SHALL REMOVE CAP AND MAINTAIN OPENING THROUGH ISLAND.



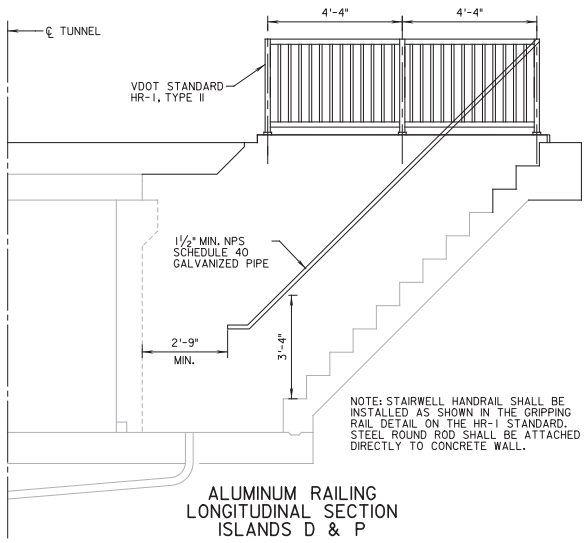
PLAN OF TOLL BOOTH DRAINAGE

SCALE: ½" = 1'-0"



ALUMINUM RAILING TRANSVERSE SECTION ISLANDS D & P

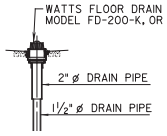
SCALE: ½" = 1'-0"



NOTE: STAIRWELL HANDRAIL SHALL BE INSTALLED AS SHOWN IN THE GRIPPING RAIL DETAIL ON THE HR-1 STANDARD. STEEL ROUND ROD SHALL BE ATTACHED DIRECTLY TO CONCRETE WALL.

ALUMINUM RAILING LONGITUDINAL SECTION ISLANDS D & P

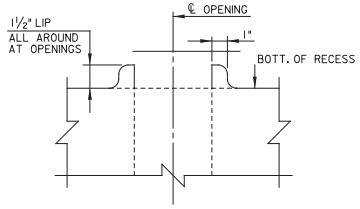
SCALE: ½" = 1'-0"



FLOOR DRAIN DETAIL

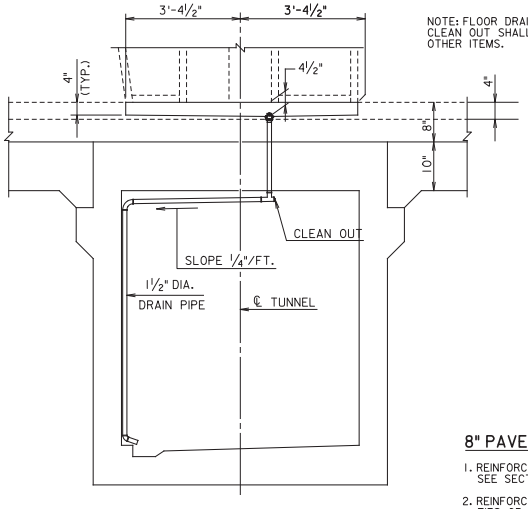
N.T.S.

NOTE: FLOOR DRAIN, PVC DRAIN PIPE AND CLEAN OUT SHALL BE INCIDENTAL TO OTHER ITEMS.



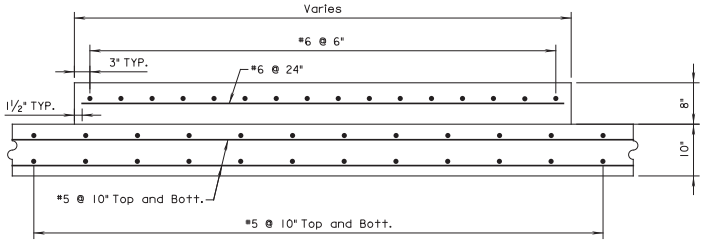
SECTION C-C

SCALE: 3" = 1'-0"



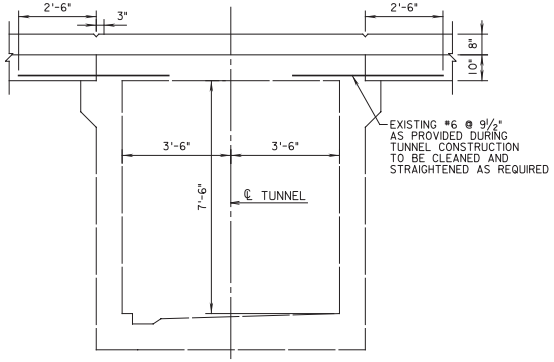
SECTION G-G

N.T.S.



8" PAVEMENT SLAB AND 10" SUBSLAB DETAILS

SCALE: 1" = 1'-0"



SECTION THRU TUNNEL BETWEEN ISLANDS

SCALE: ½" = 1'-0"

8" PAVEMENT SLAB NOTES

1. REINFORCING BARS SHALL BE GLASSFIBER REINFORCED POLYMER (GFRP). SEE SECTION 316 FOR GFRP DETAILS.
2. REINFORCING BARS SHALL BE SECURED USING PLASTIC TIES, NYLON TIES, OR PLASTIC SNAP TIES. NO METAL TIES SHALL BE USED.
3. PLASTIC OR NON-METALLIC CHAIRS SHALL BE USED TO ELEVATE REBAR AT LOCATIONS SHOWN. CHAIRS SHALL BE SECURED TO 10" SLAB BY METHOD(S) APPROVED BY THE ENGINEER.
4. CONTRACTOR TO COORDINATE PLACEMENT OF LOOPS WITH TOLL INTEGRATOR AND ENGINEER PRIOR TO POURING CONCRETE.
5. CONCRETE SHALL BE CLASS A4.
6. SEE VDOT STANDARD PR-3 FOR DETAILS NOT SHOWN ON THIS SHEET.

10" SUBSLAB NOTES

1. REINFORCING BARS SHALL BE ASTM A615, GRADE 60.
2. CONCRETE SHALL BE CLASS A3.
3. DOWELS CONNECTING PROPOSED AND EXISTING SUB-SLABS SHALL BE #6 BARS SPACED AT 18" O.C. DOWELS SHALL PROJECT A MINIMUM OF 9" INTO NEW AND EXISTING CONCRETE.

REVISIONS
1 10-25-11 MODIFIED DIMENSIONS ON SECTION G-G

B487012(04).dgn
Tuesday, October 25, 2011

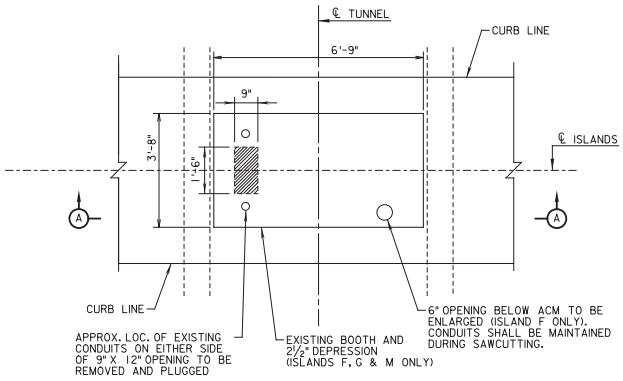
RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

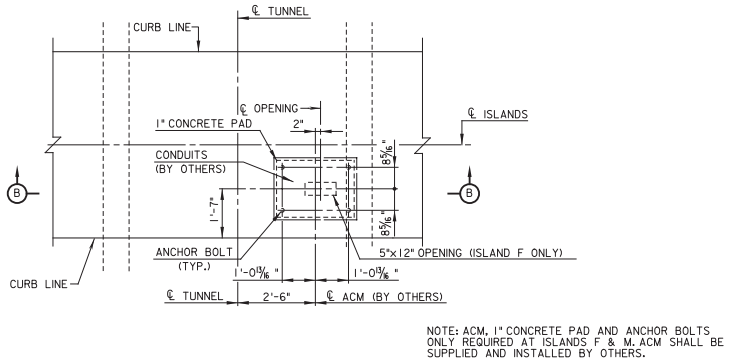
TOLL PLAZA
TOLL ISLAND DETAILS

HNTB
2900 S. QUINCY STREET, SUITE 200
ARLINGTON, VIRGINIA
(703) 824-5100

Scale:	Date:	Contract No.:	Sheet:
AS NOTED	FEB. 25, 2011	DTEORT-2011	12(4)



EXISTING



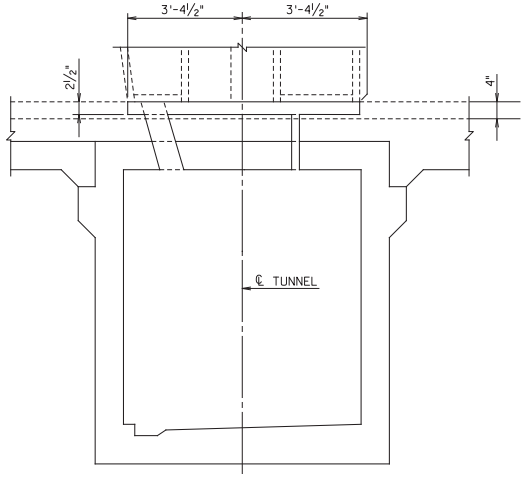
NOTE: ACM, 1" CONCRETE PAD AND ANCHOR BOLTS ONLY REQUIRED AT ISLANDS F & M. ACM SHALL BE SUPPLIED AND INSTALLED BY OTHERS.

PROPOSED

AFTER BOOTH REMOVAL (ISLANDS F, G & M)
AFTER ISLAND DEMOLITION (ISLANDS H & I)

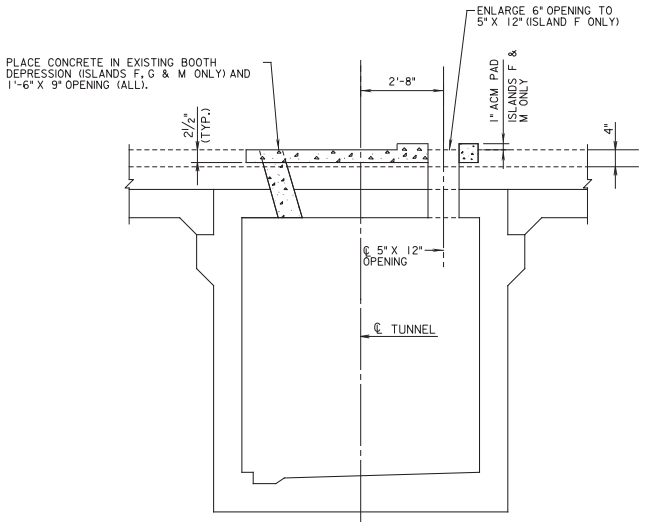
PLAN AT ISLANDS F, G, H, I & M

SCALE: ½" = 1'-0"



SECTION A-A

N.T.S.



SECTION B-B

N.T.S.

NOTE:
ALL MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS NEEDED TO COMPLETE THE WORK SHOWN ON THIS SHEET SHALL BE INCLUDED IN THE REMOVE PORTION OF EXISTING STRUCTURE (TOLL PLAZA ISLANDS) PAY ITEM.

B487012(05).dgn
Tuesday, March 15, 2011

REVISIONS

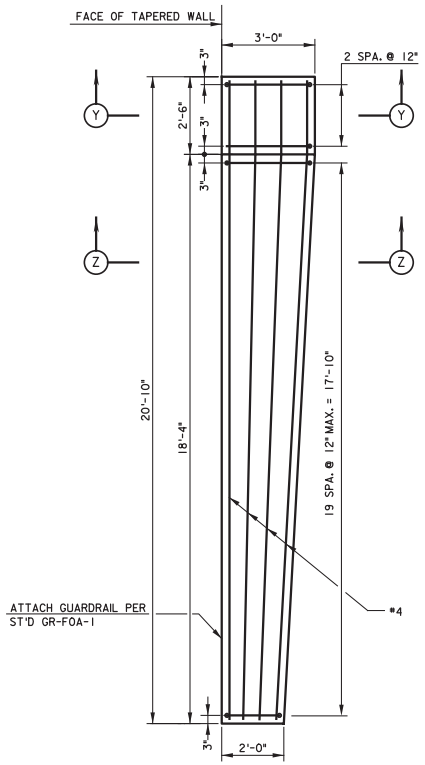
RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

TOLL PLAZA
TOLL ISLAND DETAILS 2

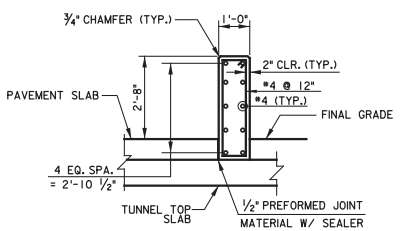
HNTB
2900 S. QUINCY STREET, SUITE 200
ARLINGTON, VIRGINIA
(703) 824-5100

Scale:	Date:	Contract No.:	Sheet:
AS NOTED	FEB. 25, 2011	DTEORT-2011	12(5)

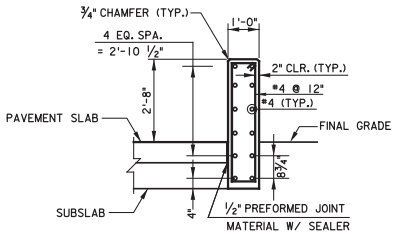


DETAIL A

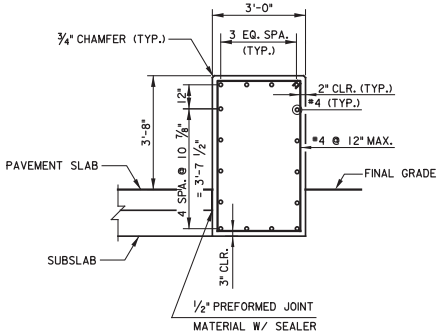
NOTE: FOR LOCATION OF DETAIL A, SEE SHEET 12(1)



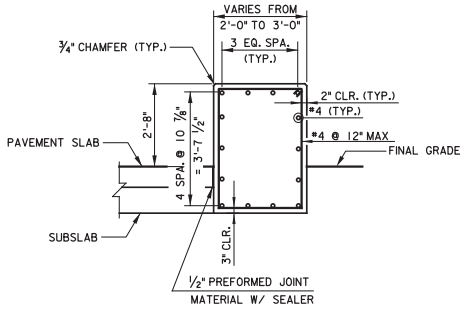
SECTION W-W



SECTION X-X



SECTION Y-Y



SECTION Z-Z

NOTE: FOR LOCATION OF SECTIONS W-W, X-X, Y-Y AND Z-Z, SEE SHEET 12(9)

B487012(05A).dgn
Thursday, December 01, 2011

REVISIONS
11-30-11 ADDED SHEET

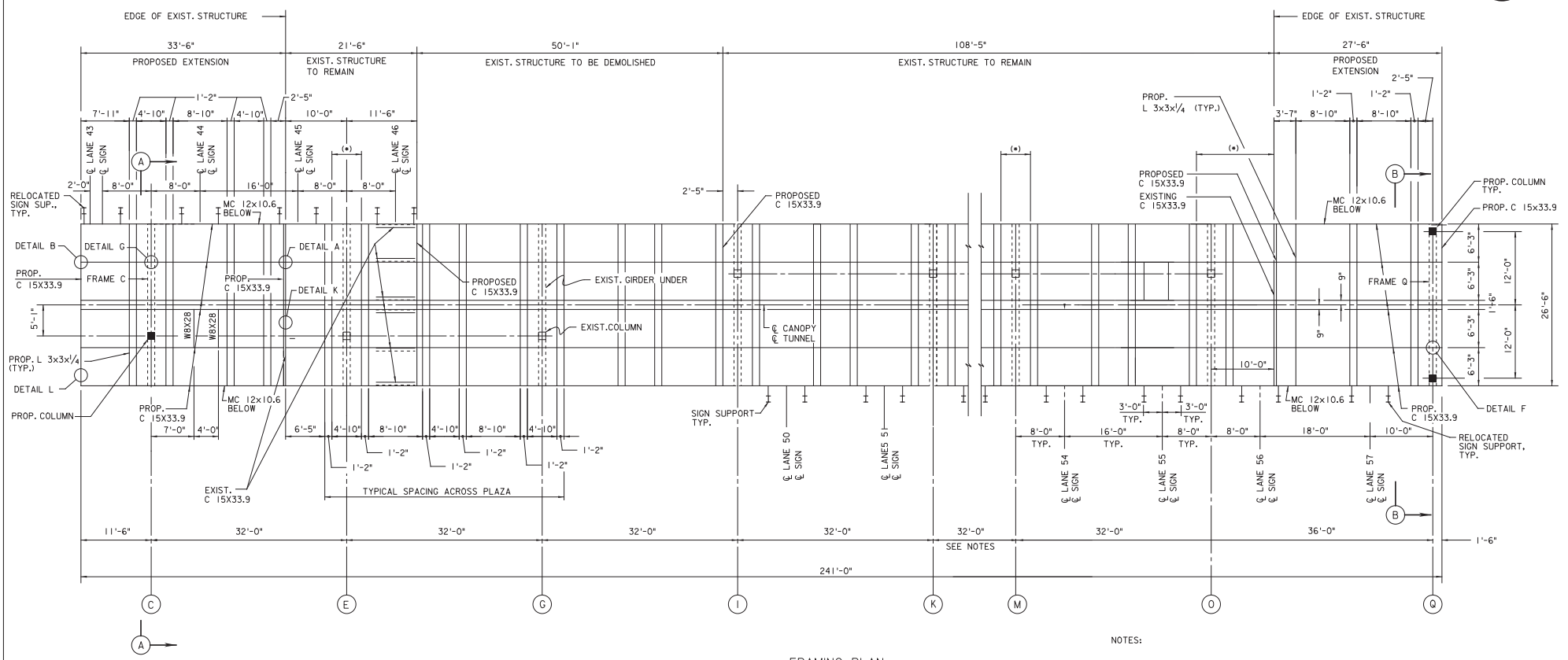
HNTB
2900 S. QUINCY STREET, SUITE 200
ARLINGTON, VIRGINIA
(703) 824-5100

RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

TOLL PLAZA
ISLAND Q DETAILS

Scale:	Date:	Contract No.:	Sheet:
1/2" = 1'-0"	NOV. 30, 2011	DTEORT-2011	12(5A)



FRAMING PLAN

SCALE: 1/8" = 1'-0"

(*) ALL 6 EXISTING C 15X33.9 IN THIS AREA SHALL BE REINFORCED WITH W5X16, SEE DETAIL 1 ON SHEET 12(10). THIS SHALL BE COMPLETED PRIOR TO ANY CANOPY REMOVAL OR EXTENSION WORK.

NOTES:

LOCATION OF SIGN SUPPORTS FOR LANES 52 AND 53 BETWEEN AXIS K AND M ARE THE SAME AS BETWEEN AXIS M AND O.

FOR SECTIONS A-A AND B-B, SEE SHEETS 12(8) AND 12(9).

FOR CANOPY EXTENSION DETAILS AND SIGN SUPPORT DETAILS, SEE SHEETS 12(10) AND 12(11).

RELOCATED X-ARROW LED SIGN SUPPORTS ARE NOT SHOWN FOR CLARITY. SEE SHEET 12(11) FOR DETAILS.

B487012(07).dgn
Tuesday, March 15, 2011

REVISIONS

HNTB
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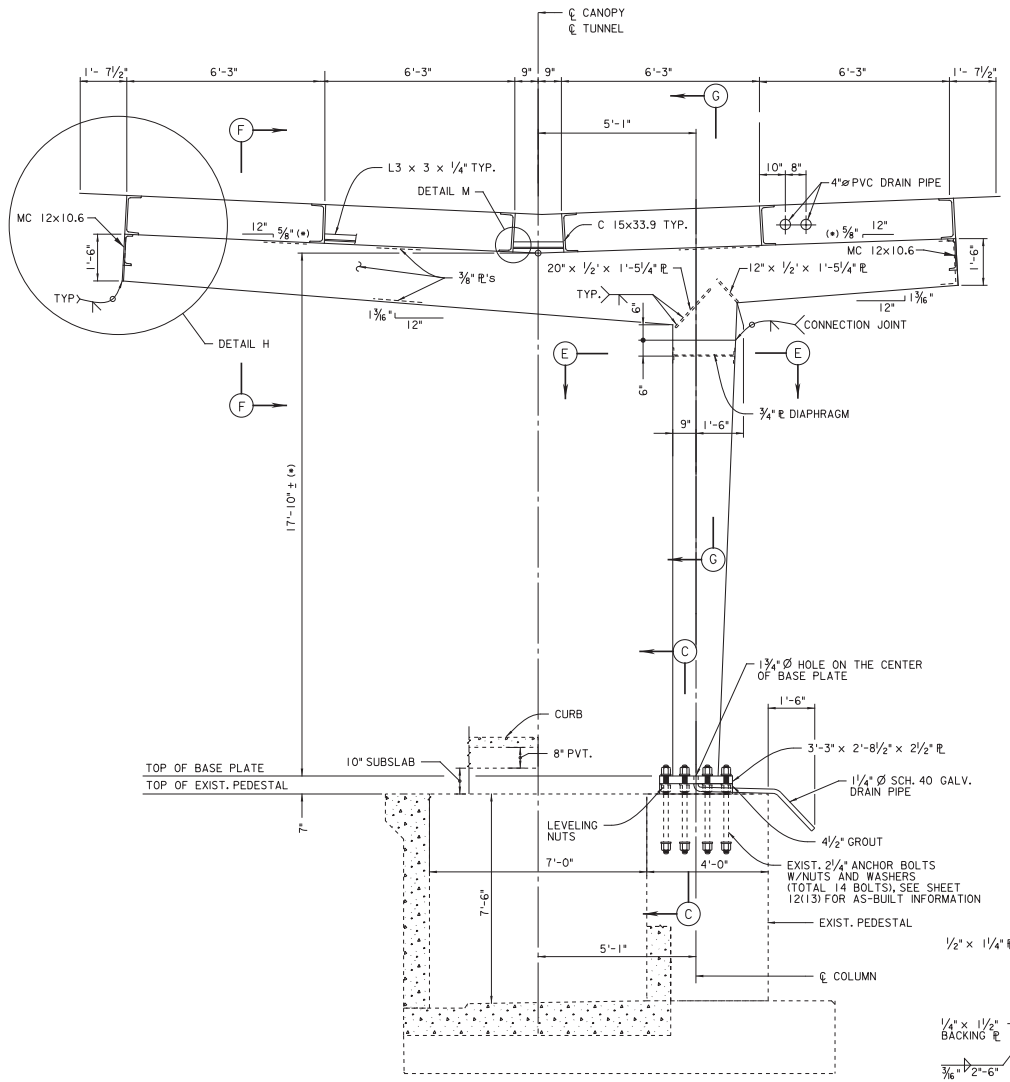
RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

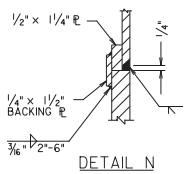
TOLL PLAZA CANOPY FRAMING PLAN

Scale:	Date:	Contract No.:	Sheet:
1/8"=1'-0"	FEB. 25, 2011	DTEORT-2011	12(7)

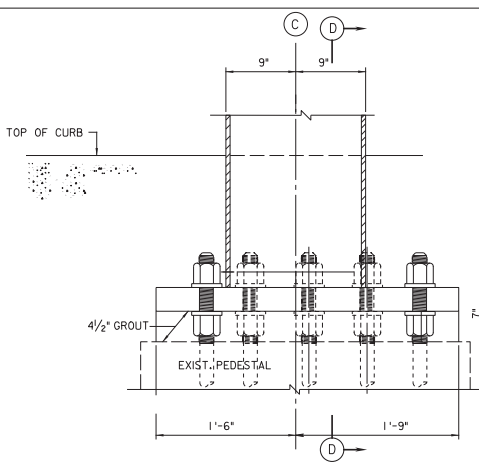


SECTION A-A
SCALE: ½" = 1'-0"

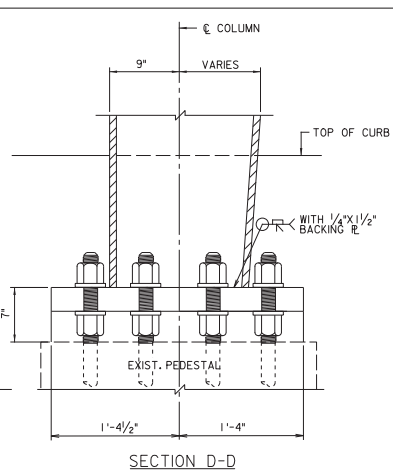
(*) 17'-10" IS BASED ON 17'-8" DIMENSION PER ORIGINAL DESIGN PLANS PLUS 2" ADJUSTMENT AT ℄ OF CANOPY FOR THE ROOF SLOPE. ELEVATIONS OF THE TOP OF THE PROPOSED FRAME "C" AT ALL C15X33.9 LOCATIONS SHALL BE 2" HIGHER THAN ELEVATIONS OF THE TOP OF EXIST. FRAME "E" AT THE SAME LOCATIONS. CONTRACTOR IS RESPONSIBLE FOR SURVEYING OF EXIST. FRAME "E" BEFORE FABRICATION OF PROPOSED FRAME "C". IF REQUIRED, FRAME HEIGHT AND SLOPES OF THE FRAME TOP SHALL BE ADJUSTED.



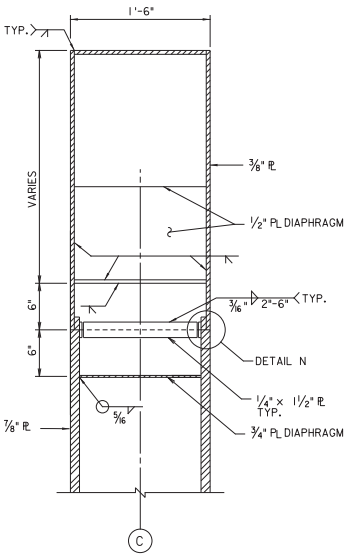
DETAIL N
SCALE: 3" = 1'-0"



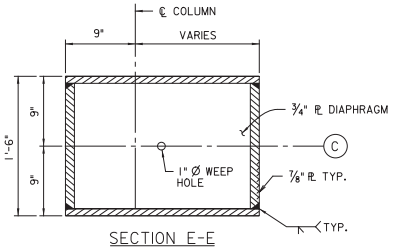
SECTION C-C
SCALE: 1½" = 1'-0"
FOR EXIST. ANCHOR BOLT LOCATION, SEE SHEET 12(13).



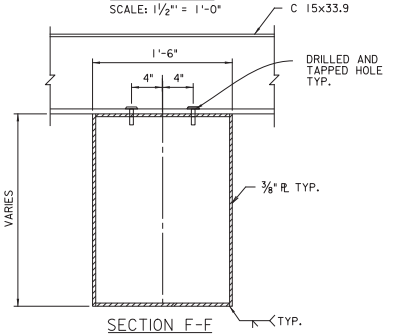
SECTION D-D
SCALE: 1½" = 1'-0"



SECTION G-G
SCALE: 1½" = 1'-0"



SECTION E-E
SCALE: 1½" = 1'-0"



SECTION F-F
SCALE: 1½" = 1'-0"

NOTES:
FOR LOCATION OF SECTION A-A, SEE SHEET 12(7).
FOR DETAILS M AND H, SEE SHEET 12(11).
LOCATION OF EXISTING ANCHOR BOLTS SHALL BE FIELD VERIFIED BY CONTRACTOR.
GROUT BELOW BASE PLATE AND 1¼" Ø DRAIN PIPE SHALL BE INCIDENTAL.

REVISIONS

B487012(08).dgn
Tuesday, March 15, 2011

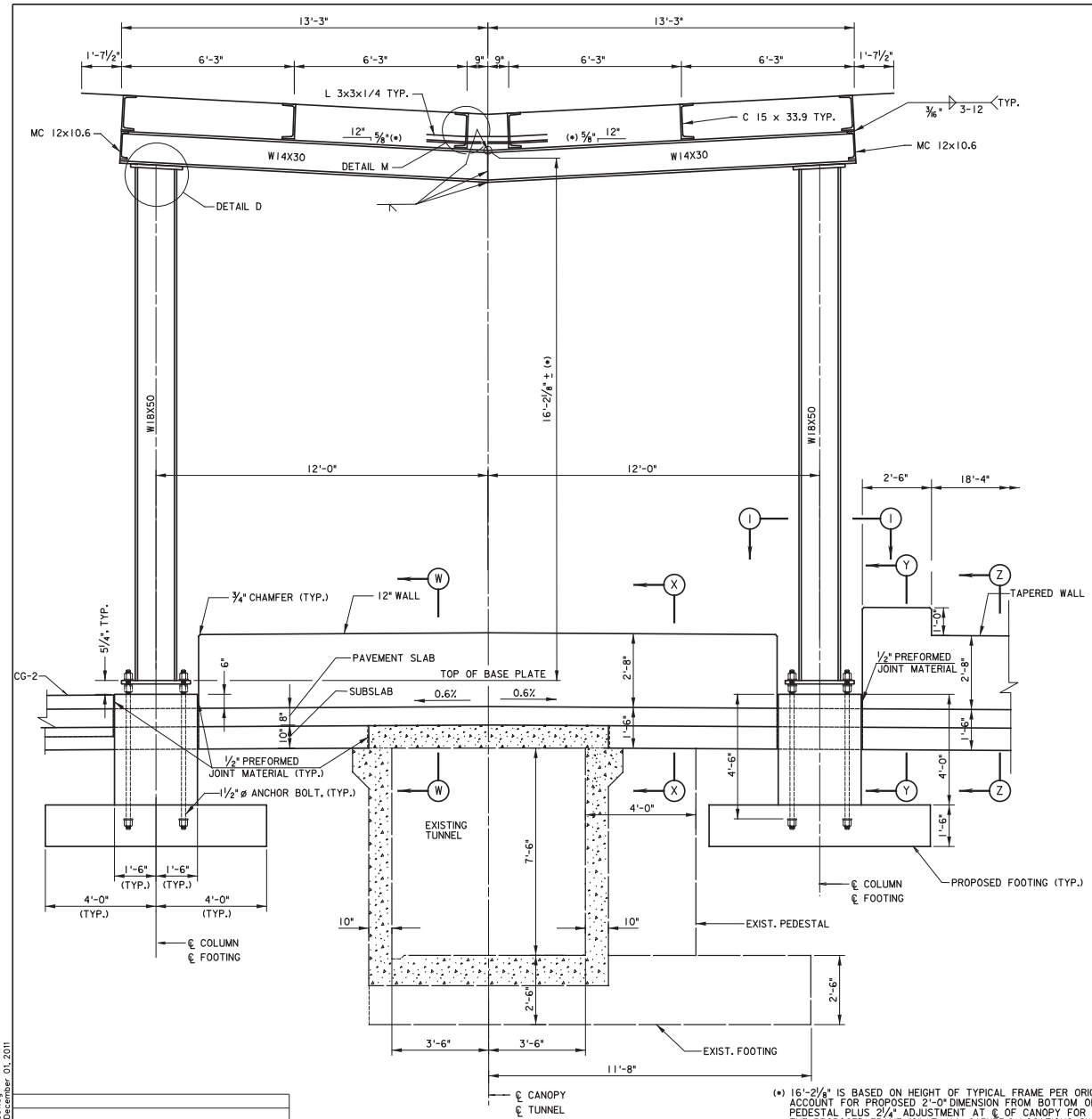
RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

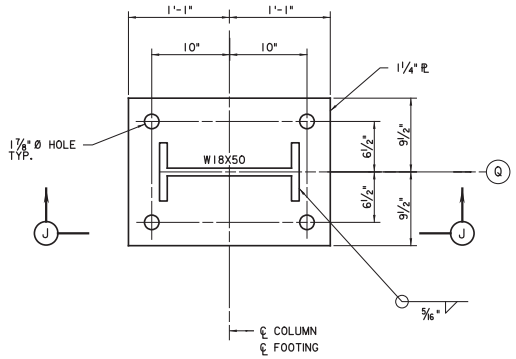
TOLL PLAZA
CANOPY FRAME C DETAILS

HNTB
2900 S. QUINCY STREET, SUITE 200
ARLINGTON, VIRGINIA
(703) 824-5100

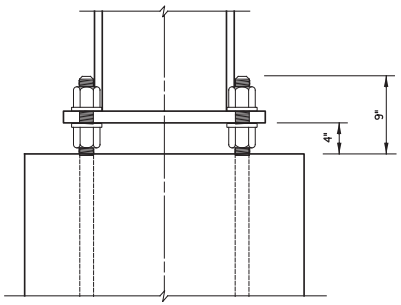
Scale:	Date:	Contract No.:	Sheet:
AS NOTED	FEB. 25, 2011	DTEORT-2011	12(8)



SECTION B-B
SCALE: ½" = 1'-0"



SECTION I-I
SCALE: 1½" = 1'-0"



SECTION J-J
SCALE: 1½" = 1'-0"

NOTES:
FOR LOCATION OF SECTION B-B, SEE SHEET 12(7).

FOR DETAIL D, SEE SHEET 12(10).

FOR DETAIL M, SEE SHEET 12(11).

FOR FOOTING, SEE SHEET 12(13).

FOR 8" PAVEMENT AND 10" SUBSLAB DETAILS, SEE SHEET 12(4).

FOR SECTIONS W-W, X-X, Y-Y AND Z-Z, SEE SHEET 12(5A).

(*) 16'-2 1/8" IS BASED ON HEIGHT OF TYPICAL FRAME PER ORIGINAL DESIGN PLANS MODIFIED TO ACCOUNT FOR PROPOSED 2'-0" DIMENSION FROM BOTTOM OF SUBSLAB TO TOP OF FOOTING PEDESTAL PLUS 2 1/4" ADJUSTMENT AT ℄ OF CANOPY FOR THE ROOF SLOPE. ELEVATION OF THE PROPOSED FRAME "Q" AT ALL C15X33.9 LOCATIONS SHALL BE 2 1/4" HIGHER THAN ELEVATIONS OF THE TOP OF EXIST. FRAME "O" AT THE SAME LOCATIONS. CONTRACTOR IS RESPONSIBLE FOR SURVEYING THE EXIST. FRAME "O" PRIOR TO FABRICATION OF PROPOSED FRAME "Q". IF REQUIRED, FRAME HEIGHT AND SLOPES OF THE FRAME TOP SHALL BE ADJUSTED.

REVISIONS
11-30-11 ADDED CONCRETE WALLS AND CG-2

B487012(09).dgn
Thursday, December 01, 2011

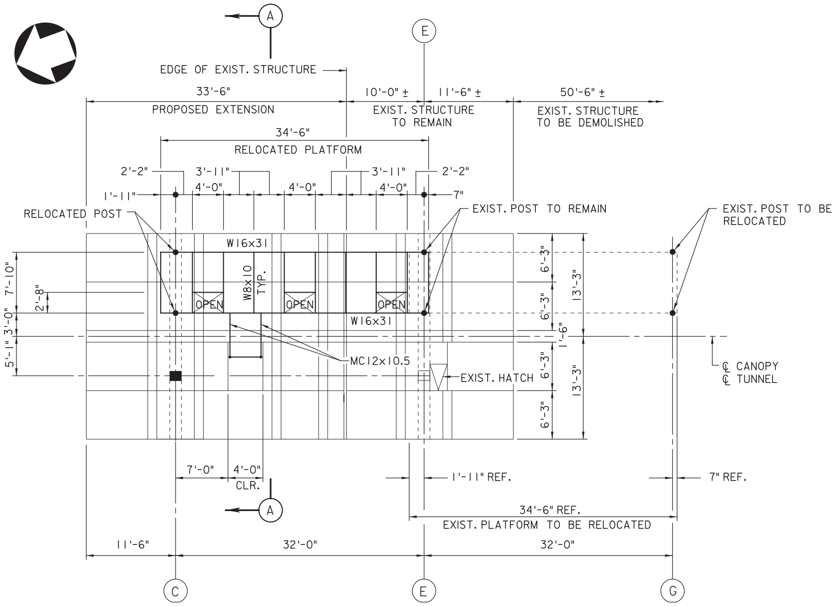
HNTB
2900 S. QUINCY STREET, SUITE 200
ARLINGTON, VIRGINIA
(703) 824-5100

RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

TOLL PLAZA
CANOPY FRAME Q DETAILS

Scale:	Date:	Contract No.:	Sheet:
AS NOTED	FEB. 25, 2011	DTEORT-2011	12(9)



RELOCATED ROOF PLATFORM - NORTH FRAMING PARTIAL PLAN

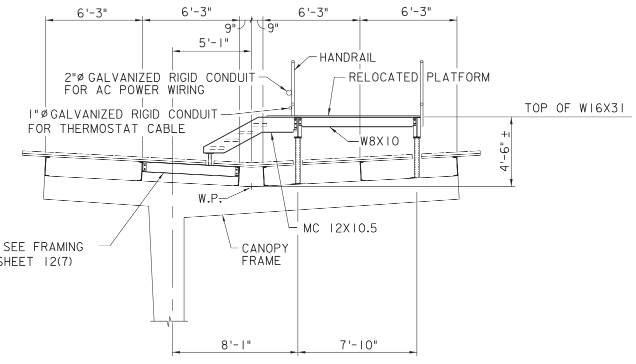
SCALE: 1/8" = 1'-0"

HVAC PLATFORM IS EXISTING BETWEEN COLUMN LINES "E" AND "G" AND SHALL BE RELOCATED TO COLUMN LINES "C" AND "E".

ALL DIMENSION AND MEMBER SIZES FOR RELOCATED PLATFORM ARE SHOWN AS REFERENCE ONLY. THIS INFORMATION IS TAKEN FROM PLAN SET "RICHMOND METROPOLITAN AUTHORITY (RMA), DOWNTOWN EXPRESSWAY & POWHITE PARKWAY TOOL BOOTH MECHANICAL SYSTEMS UPGRADES" SHEETS NOS. A-102 REV. 0, S-101 REV. 1 AND S-201 REV. 1 JAN 2003.

ALL DIMENSIONS AND ELEVATIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR.

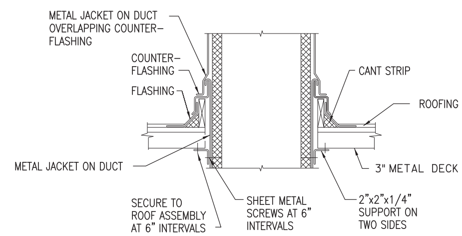
CONTRACTOR SHALL FIELD VERIFY CONDITION OF EXISTING POSTS ON COLUMN LINE "G" PRIOR TO INSTALLATION ON COLUMN LINE "C." IF EXISTING POSTS CAN NOT BE REUSED, NEW POSTS SHALL BE FABRICATED. NEW POSTS SHALL MATCH THE EXISTING POSTS AND IF REQUIRED THE HEIGHT SHALL BE ADJUSTED AS NEEDED. THE TOP OF RELOCATED PLATFORM SHALL BE LEVEL.



SECTION A-A

1/4"=1'-0"

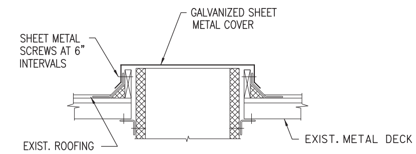
FOR LOCATION OF ROOF PENETRATION FOR ELECTRICAL CONDUITS, SEE SHEET 12(14).



TYPICAL DUCT THRU ROOF DETAIL

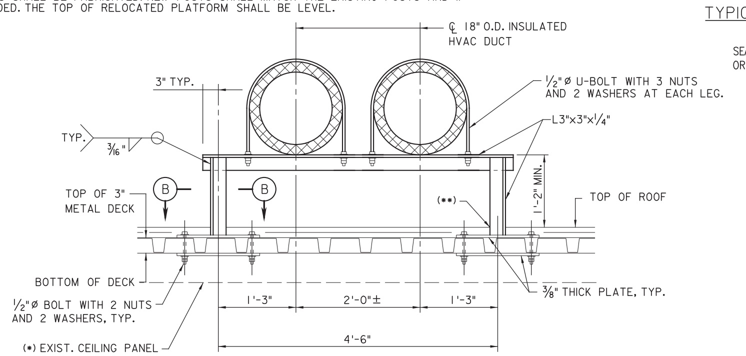
SCALE: NONE

SEAL ALL EXPOSED JOINTS WITH SUITABLE MASTIC OR FOIL BACKED TAPE TO PREVENT LEAKING.



EXISTING SEALED DUCT ROOF PENETRATION DETAIL

SCALE: NONE



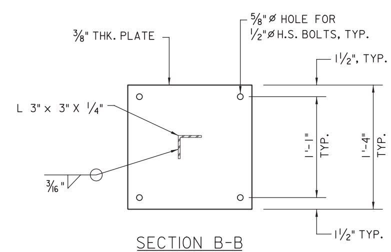
HVAC DUCT SUPPORT DETAIL

SCALE: 1" = 1'-0"

ALL DUCT SUPPORT STEEL, BOLTS, NUTS AND WASHERS SHALL BE HOT-DIP GALVANIZED.

(•) WHEN SUPPORT IS INSTALLED ON EXISTING ROOF, THE CEILING PANEL SHALL BE REMOVED AND REINSTALLED AFTER DUCT SUPPORT INSTALLATION.

(••) WHEN SUPPORT IS INSTALLED ON EXISTING ROOF, REMOVE EXISTING PLY FELTS AND INSULATION BOARD AROUND SUPPORT. ROOFING MATERIAL SHALL BE PUT BACK AFTER PLATE AND ANGLE INSTALLATION. IN ADDITION, CONTRACTOR SHALL INSTALL FLASHING AND CANT STRIP AROUND ANGLE TO PREVENT LEAKING.



SECTION B-B

SCALE: 1 1/2" = 1'-0"

NOTES:

FOR LOCATION OF ROOF PENETRATION DETAILS AND HVAC DUCT SUPPORTS, SEE SHEET 12(14).

REVISIONS	

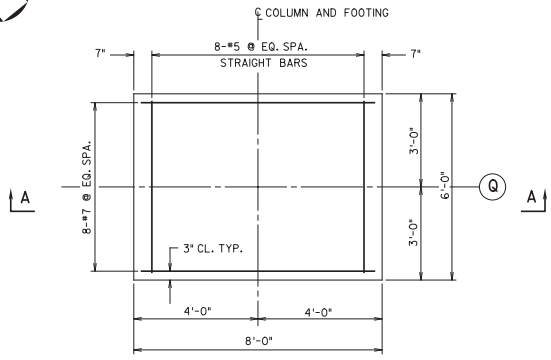
B4870(12)(12).dgn
Tuesday, March 15, 2011

HNTB
2900 S. QUINCY STREET, SUITE 200
ARLINGTON, VIRGINIA
(703) 824-5100

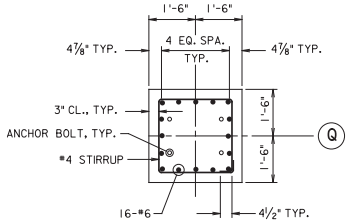
RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY
DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

TOLL PLAZA CANOPY
CANOPY EXTENSION DETAILS 3

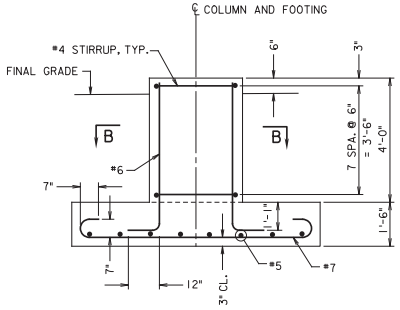
Scale:	Date:	Contract No.:	Sheet:
	FEB. 25, 2011	DTEORT-2011	12(12)



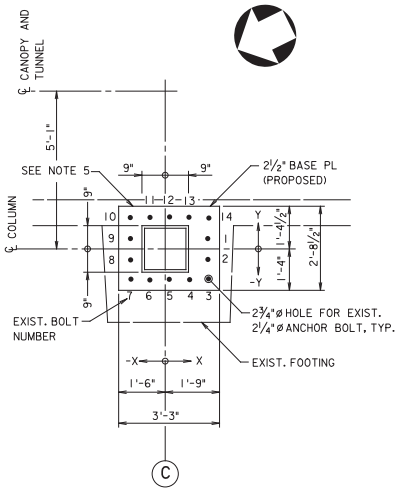
FRAME Q FOOTING PLAN
SCALE: ½" = 1'-0"



SECTION B-B
SCALE: ½" = 1'-0"



SECTION A-A
SCALE: ½" = 1'-0"



FRAME C COLUMN - BASE PLATE PLAN
SCALE: ½" = 1'-0"

EXISTING FRAME C BOLT LOCATION

BOLT NO.	COORDINATES		BOLT PROJECTION ABOVE TOP OF PEDESTAL
	X	Y	
1	1'-4 7/16"	4"	1 1 5/8"
2	1'-4 1/2"	-4 1/16"	1 1 3/4"
3	1'-4 3/4"	-1 1 3/16"	1 1 3/4"
4	9 7/16"	-1 1 7/8"	1 1 3/4"
5	1 9/16"	-1 1 3/4"	1 1 5/8"
6	-5 1/16"	-12"	1 1 5/8"
7	-1'-1 1/4"	-1 1 11/16"	1 1 3/4"
8	-1'-1 3/8"	-4 1/4"	1 1 1/2"
9	-1'-1 7/16"	4"	1 1 1/2"
10	-1'-1 1/2"	1'-0 1/8"	1 1 5/8"
11	-5 7/8"	1'-0 3/16"	1 1 1/2"
12	1 1/16"	1'-0 3/8"	1 1 5/8"
13	9 3/16"	1'-0 1/4"	1 1 3/4"
14	1'-4 7/8"	1 1 5/16"	1 1 5/8"

NOTES:
1. ALL INFORMATION SHOWN IN THIS TABLE IS EXTRACTED FROM PREVIOUS SURVEY FILE AND SHALL BE FIELD VERIFIED PRIOR TO FABRICATION OF BASE PLATE.
2. BOLT PROJECTION IS BASED ON THE TOP OF EXISTING PEDESTAL ELEVATION 200.14'.
3. ALL EXISTING BOLTS SHALL BE HAND-TOOL OR BLAST CLEANED TO REMOVE RUST AND THAN COATED BY ZINC-RICH PRIMER AND COATING SYSTEM FROM VDOT APPROVED PRODUCTS LIST AND IN ACCORDANCE WITH SECTION 411 OF THE SPECIFICATIONS. SUITABLE PRECAUTIONS SHALL BE TAKEN TO PROTECT BOLT THREAD AGAINST DAMAGE DURING REMOVAL OF RUST. TWO NEW NUTS AND TWO NEW WASHERS SHALL BE PROVIDED FOR EACH BOLT. THE NEW NUTS AND WASHERS SHALL BE HOT-DIP GALVANIZED PER ASTM A153.
4. TOP OF EXISTING CONCRETE PEDESTAL SHALL BE CLEANED AND ROUGHENED.
5. IN THE EVENT THERE IS A CONFLICT BETWEEN THE EAST EDGE OF THE PROPOSED BASE PLATE AND THE WEST EDGE OF THE TUNNEL ROOF SLAB, THE ROOF SLAB CONCRETE SHALL BE REMOVED TO THE LIMITS OF THE BASE PLATE.

NOTES:

FOR FRAME Q ANCHOR BOLT LOCATION AND DETAILS, SEE SHEET 12(9).

FOR FRAME C EXISTING ANCHOR BOLT DETAILS, SEE SHEET 12(8).

B487012(13).dgn
Tuesday, March 15, 2011

REVISIONS

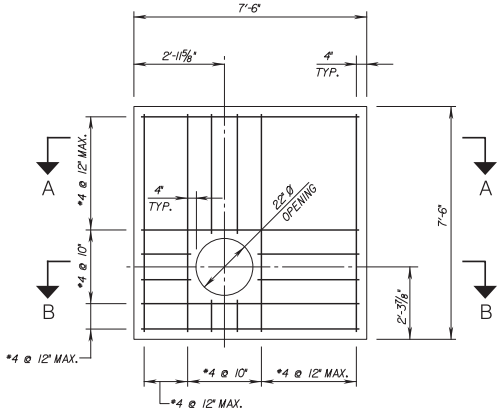
RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY

DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING

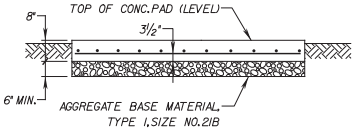
TOLL PLAZA
CANOPY FOOTING DETAILS

HNTB
2900 S. QUINCY STREET, SUITE 200
ARLINGTON, VIRGINIA
(703) 824-5100

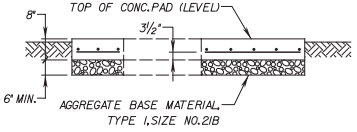
Scale:	Date:	Contract No.:	Sheet:
AS NOTED	FEB. 25, 2011	DTEORT-2011	12(13)



PLAN



SECTION A-A

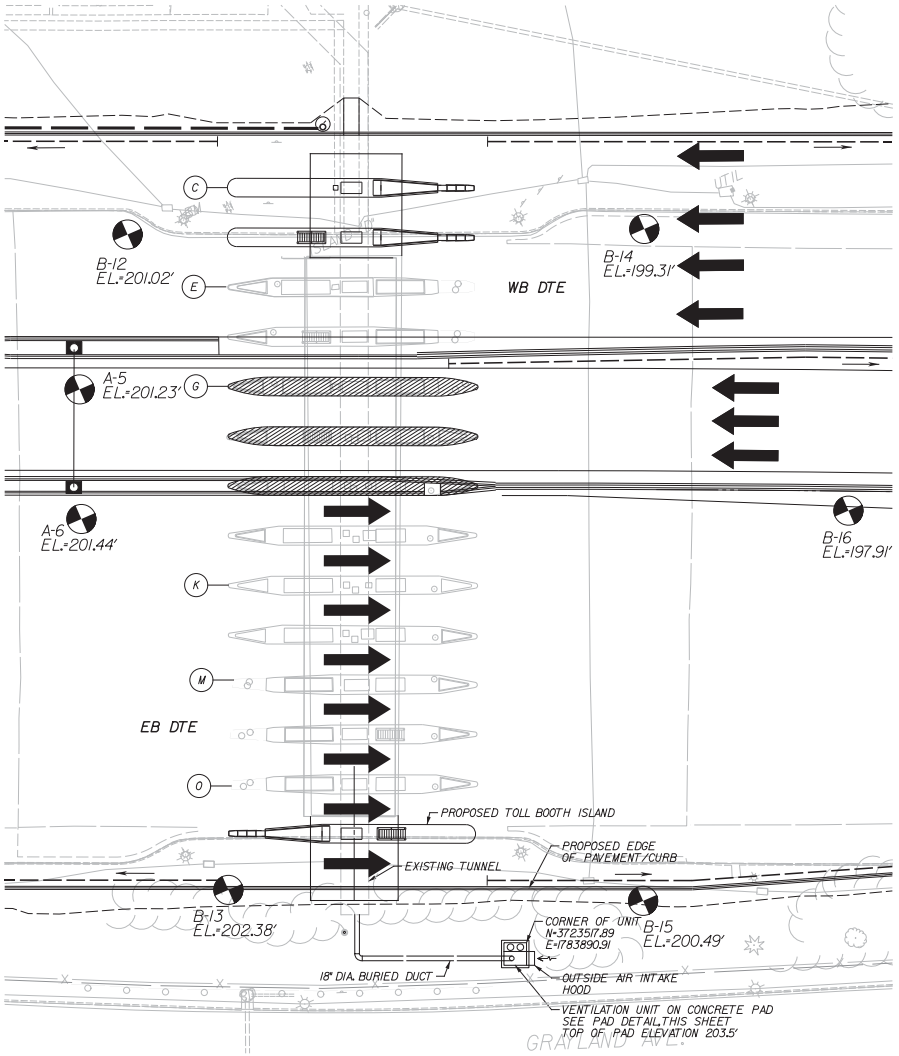


SECTION B-B

NOTES

1. CONCRETE SHALL BE CLASS A3. DEFORMED REINFORCING BARS SHALL CONFORM TO ASTM A615 GRADE 60.
2. PAD DIMENSIONS AND LAYOUT SHOWN SHALL BE USED FOR THE CONTRACT SPECIFIED TRANE OAI UNIT. IF A DIFFERENT UNIT IS APPROVED, CONTRACTOR IS REQUIRED TO SUBMIT PAD LAYOUT TO THE ENGINEER FOR REVIEW AND APPROVAL.
3. CONTRACTOR SHALL INSTALL THE BURIED DUCT ABOVE THE TOP OF PAD ELEVATION PRIOR TO POURING PAD CONCRETE.
4. CONTRACTOR SHALL VERIFY DIMENSIONS OF ACTUAL CURB AND UNIT SUPPLIED AND SUBMIT ANY DISCREPENCIES BETWEEN THE PAD LAYOUT AND UNIT TO THE ENGINEER.

PAD LAYOUT
NTS



PLAN

20' 0 20' 40'
SCALE: 1" = 20'

GENERAL MECHANICAL NOTES:

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF VIRGINIA MECHANICAL CODE
2. VISIT SITE AND NOTE EXISTING CONDITION AFFECTING THE WORK PRIOR TO BIDDING. RELOCATION OF EXISTING SYSTEMS FOR THE INSTALLATION OF NEW WORK SHALL BE INCLUDED IN THE SCOPE OF THIS PROJECT.
3. COORDINATE ALL MECHANICAL WORK WITH THAT OF OTHER TRADES TO ENSURE PROPER AND ADEQUATE INTERFACE OF THEIR WORK WITH THE WORK OF THIS CONTRACTOR.
4. DEMOLITION: REMOVE ALL WORK AS INDICATED. REMOVE OR REROUTE EXISTING WORK TO SUIT NEW WORK. DO ALL CORE DRILLING, CUTTING AND PATCHING FOR INSTALLATION OF NEW WORK. EXISTING EQUIPMENT AND DEVICE SHALL BE REMOVED FROM SITE AT THE DIRECTION OF THE ENGINEER.
5. DAMAGES: CORRECT ALL DAMAGE TO EXISTING FINISHES, TUNNEL WALLS, FLOOR AND CEILING, OR SYSTEMS ASSOCIATED WITH THE INSTALLATION OF NEW WORK.
6. DRAWINGS ARE SCHEMATIC REPRESENTATION OF THE WORK TO BE PERFORMED AND ARE NOT INTENDED TO SHOW ALL DETAIL OF THE WORK. VERIFY LOCATIONS AND MEASUREMENTS OF ALL ITEMS AT PROJECT SITE PRIOR TO FABRICATION AND INSTALLATION.
7. PROVIDE NEC MINIMUM CODE CLEARANCE IN FRONT OF ANY ELECTRICAL EQUIPMENT (FRONT, BELOW, ABOVE, ETC.). ARRANGE EQUIPMENT SO THAT EQUIPMENT ACCESS CLEARANCE INDICATED ON DRAWINGS OR AS RECOMMENDED BY MANUFACTURER ARE PROVIDED.
8. PROVIDE ALL OFFSETS, FITTINGS AND TRANSITIONS REQUIRED TO CONNECT TO MECHANICAL EQUIPMENT.
9. ITEMS NOTED "TYPICAL" ON ANY DRAWING SHEET APPLY TO THE ENTIRE DRAWING SET.
10. REFER TO ELECTRICAL DRAWINGS FOR POWER CONNECTIONS TO MECHANICAL EQUIPMENT.

ABBREVATIONS

FRP FIBER REINFORCED PLASTIC
OSA OUTSIDE AIR

REVISIONS

M4870114(1).dgn
Tuesday, March 15, 2011

RICHMOND METROPOLITAN AUTHORITY
RICHMOND DOWNTOWN EXPRESSWAY
DOWNTOWN EXPRESSWAY OPEN ROAD TOLLING
MECHANICAL PLAN

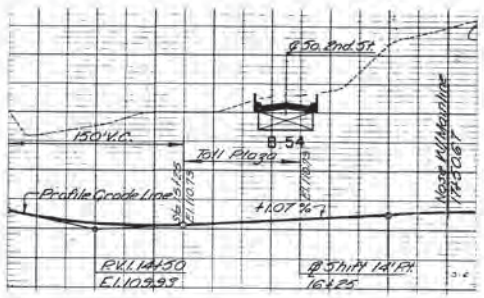
HNTB
2900 S. QUINCY STREET, SUITE 200
ARLINGTON, VIRGINIA
(703) 824-5100

Scale:	Date:	Contract No.:	Sheet:
1" = 20'-0"	FEB. 25, 2011	DTEORT-2011	14(1)

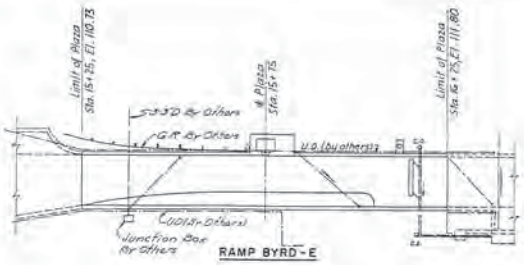
DTE RAMP TOLL PLAZAS

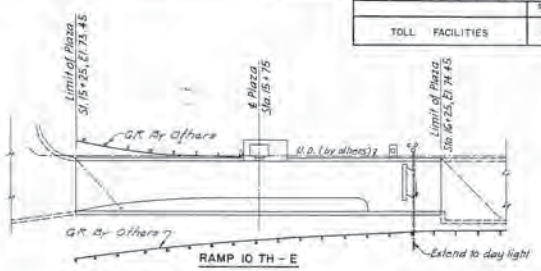
ORIGINAL PLANS

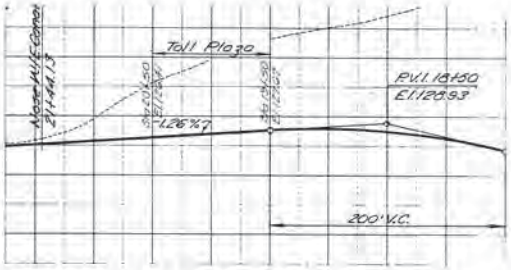
RICHMOND EXPRESSWAY SYSTEM	SHEET NO.	TOTAL SHEETS
TOLL FACILITIES	4	38



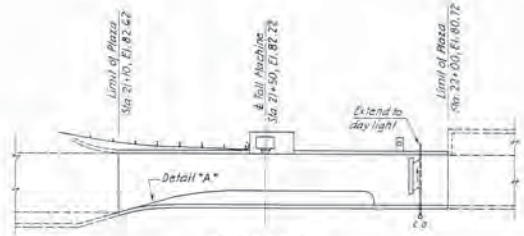
RAMP BYRD-E
Scale: 1"=10' Vert.
1"=50' Horiz.

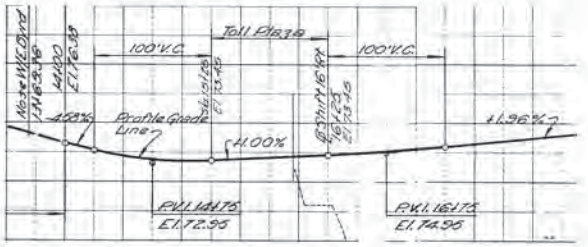




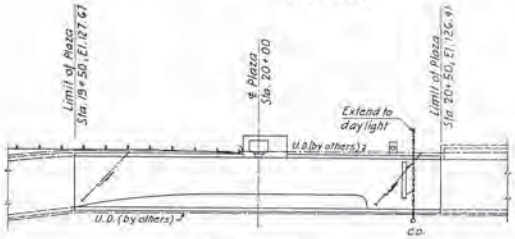


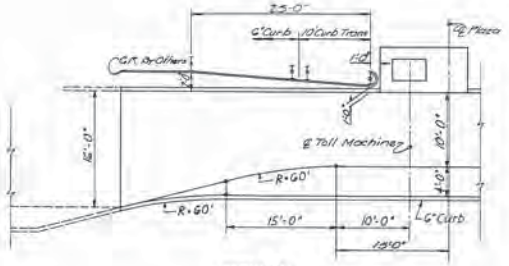
RAMP E-CANAL
Scale: 1"=10' Vert.
1"=50' Horiz.

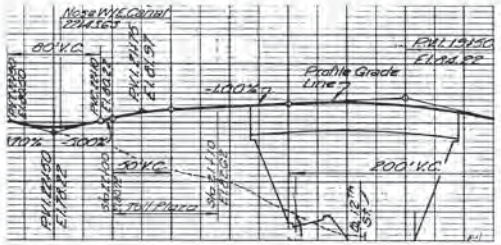




RAMP 10TH-E
Scale: 1"=10' Vert.
1"=50' Horiz.







AS BUILT

	BY	DATE
MADE	D.E.N.	5-68
CHECKED	W.J.W.	5-68
IN CHARGE H.D.S.		

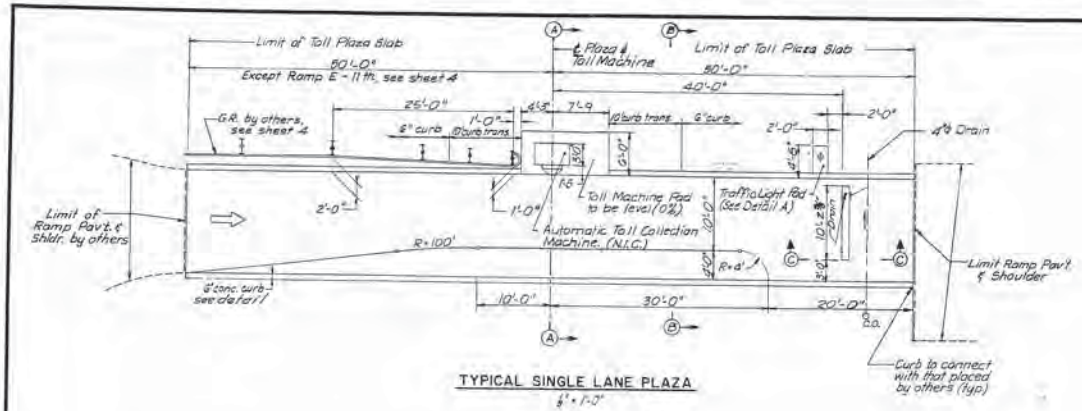
NO.	REVISION	BY	DATE
1	Finial Check	W.J.W.	6-68

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

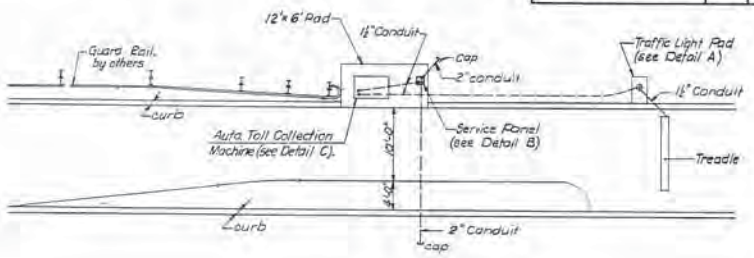
RAMP PLAZA LAYOUTS

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY

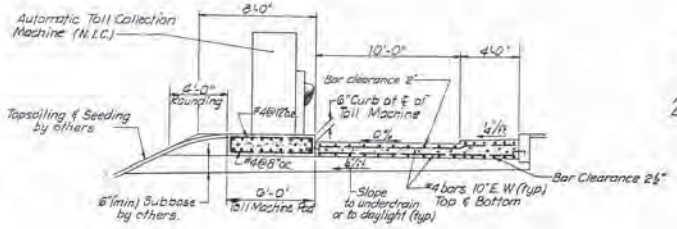
SCALE: ½"=1'-0"
CONTRACT NO. TC-7
SHEET NO. 4 OF 38



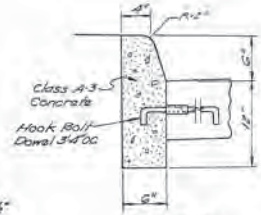
TYPICAL SINGLE LANE PLAZA
1/8" = 1'-0"



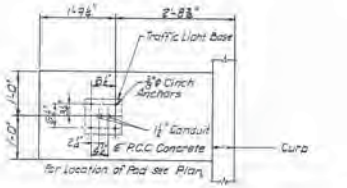
CONDUIT LAYOUT
1/8" = 1'-0"



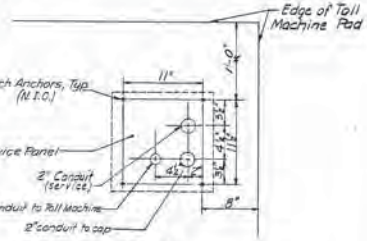
SECTION "A-A"
1/2" = 1'-0"



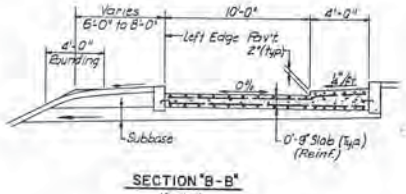
6" CURB DETAIL



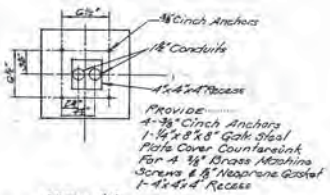
DETAIL "A"
See Detail 'D' For Future Traffic Light Locations
TRAFFIC LIGHT CONDUIT LAYOUT
1/2" = 1'-0"



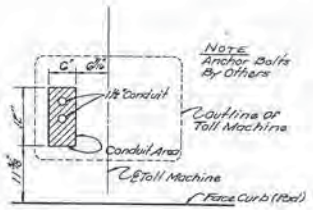
DETAIL "B"
SERVICE PANEL CONDUIT LAYOUT
1½" = 1'-0"



SECTION "B-B"
1/2" = 1'-0"



DETAIL 'D'
(For Future Traffic Light Locations)



DETAIL "C"

AUTOMATIC TOLL MACHINE CONDUIT LAYOUT
1/2" = 1'-0"

	BY	DATE		REVISION	BY	DATE
MADE	W. J. W.	5-68	3	Rev. Toll Machine Conduit	PHT	4/75
CHECKED	D.E.N.	5-68	2	Re-Treadle Design Toll Machine Conduit	PHT	2/75
IN CHARGE H.D.S.			1	Final Check	D.E.N	6-68

AS BUILT

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

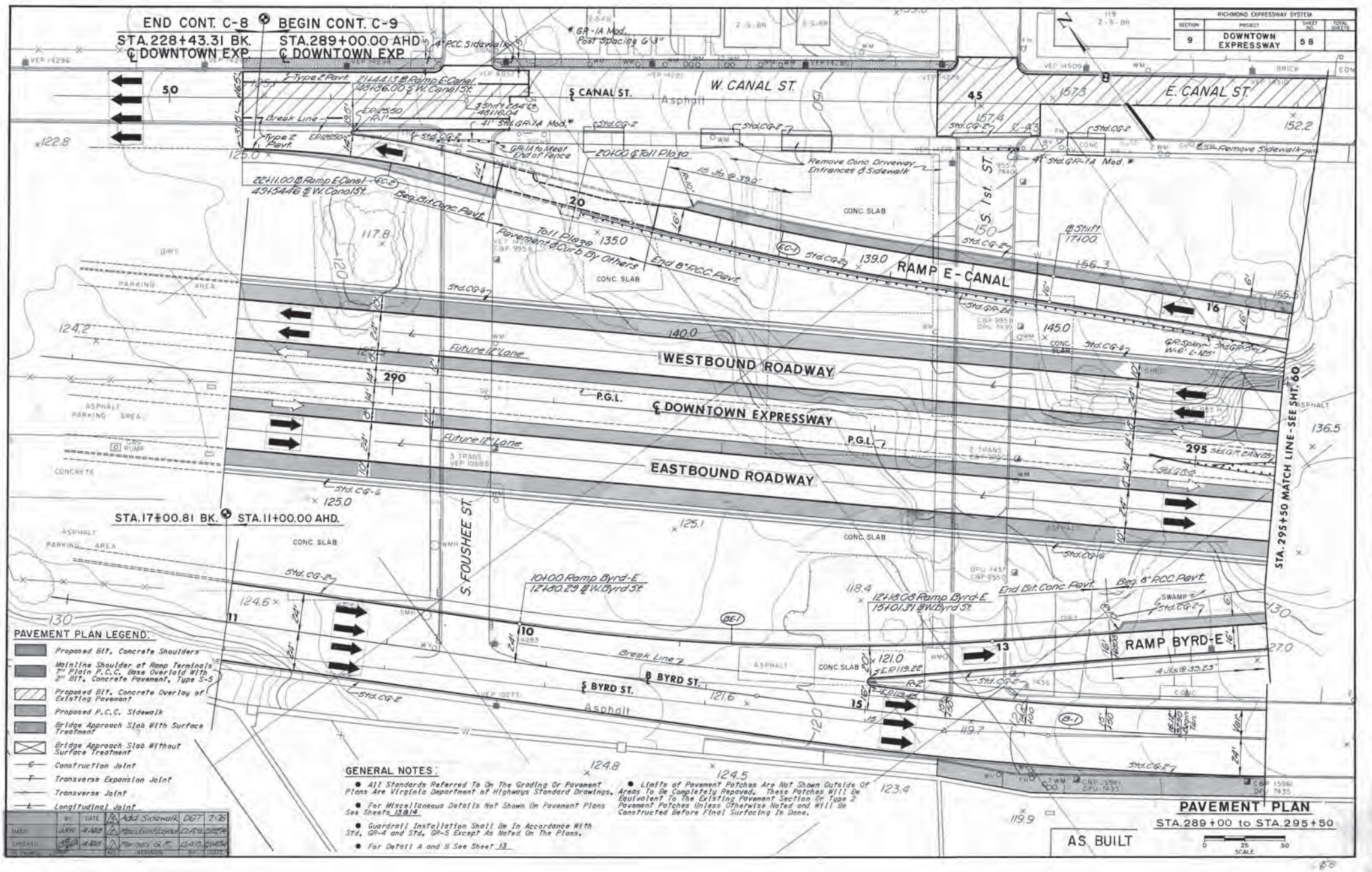
SINGLE LANE RAMP PLAZA
PLAN AND DETAILS

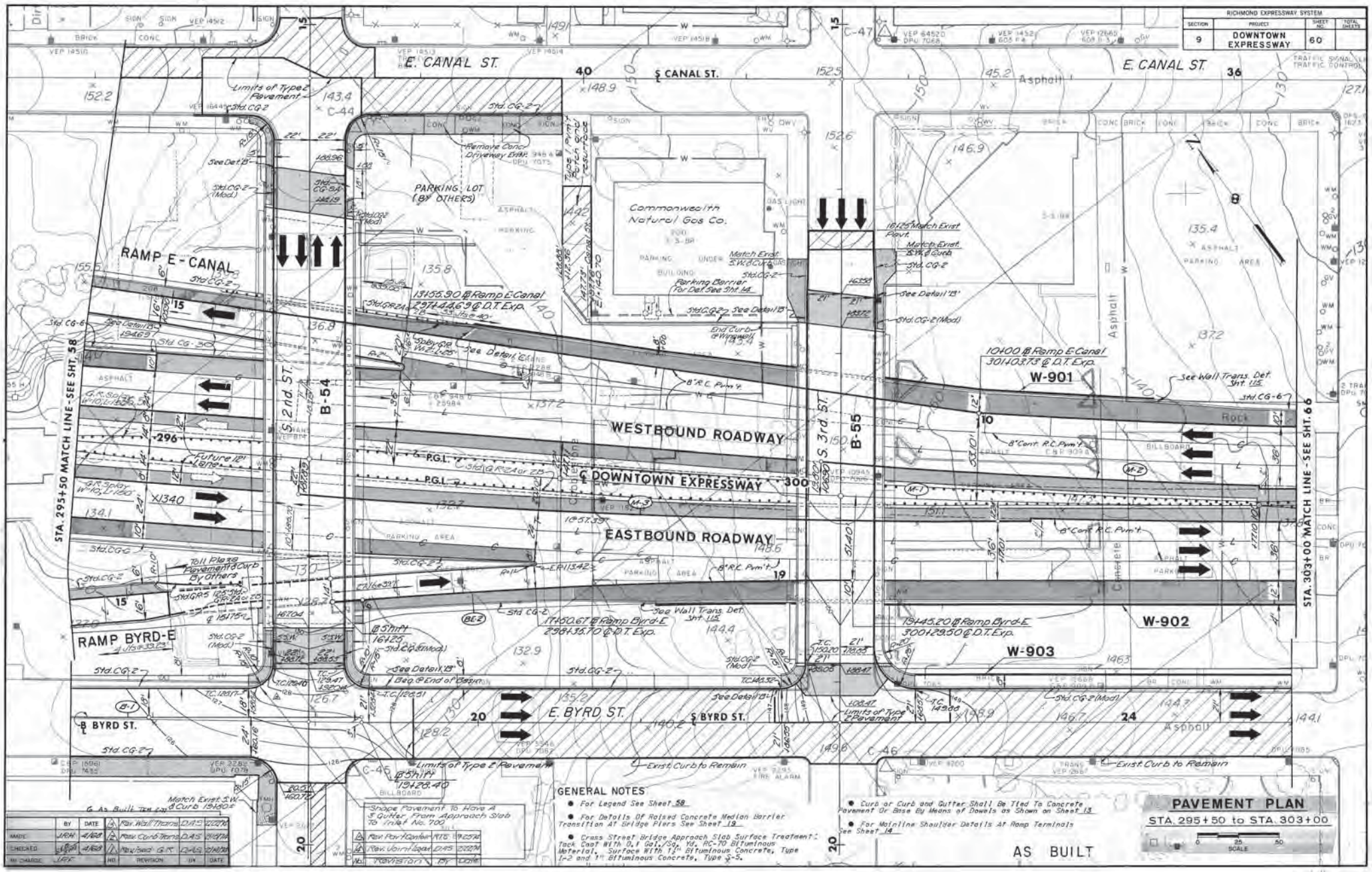
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY

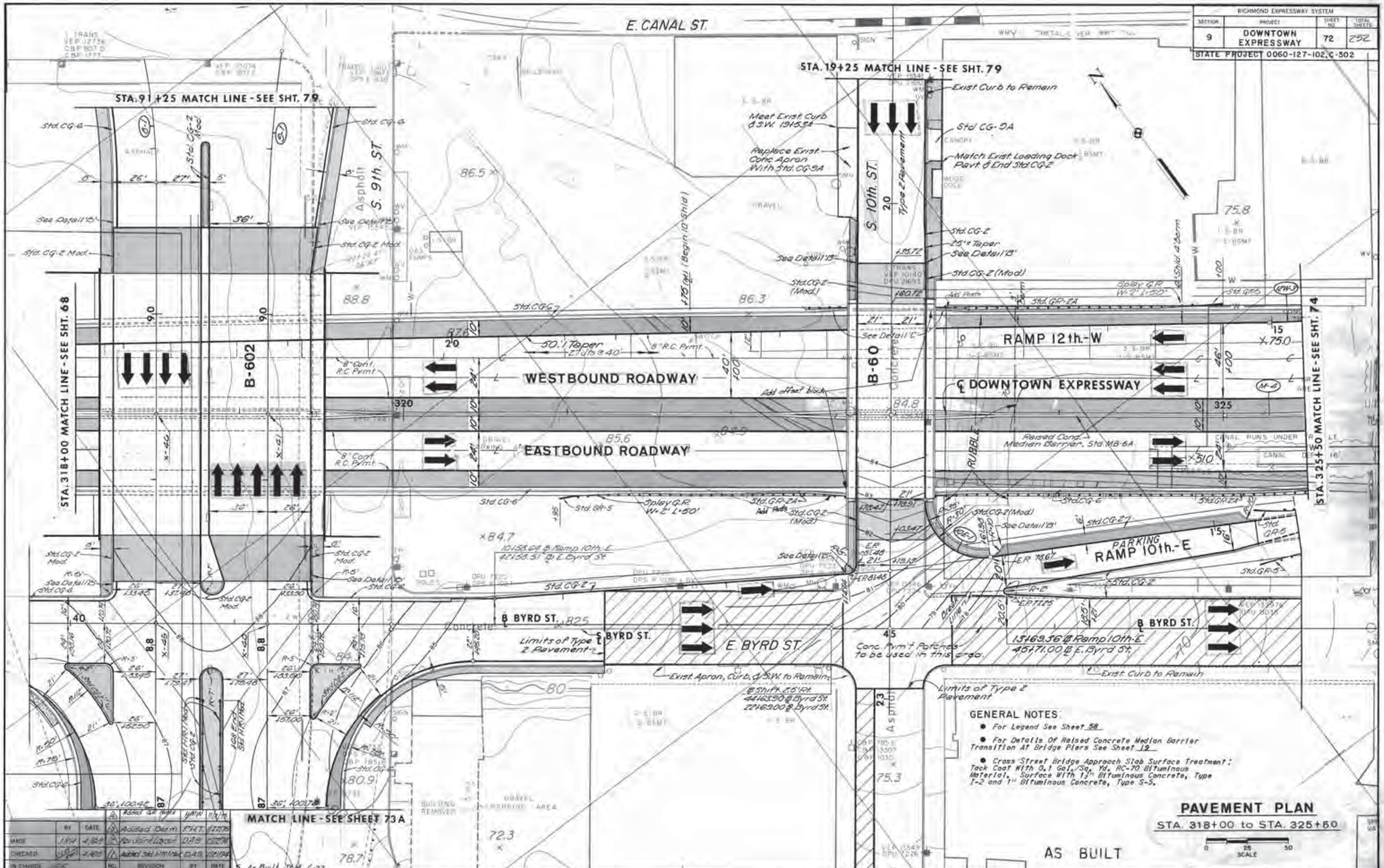
SCALE: AS NOTED
CONTRACT NO. 77-3
SHEET NO. 9 OF ___

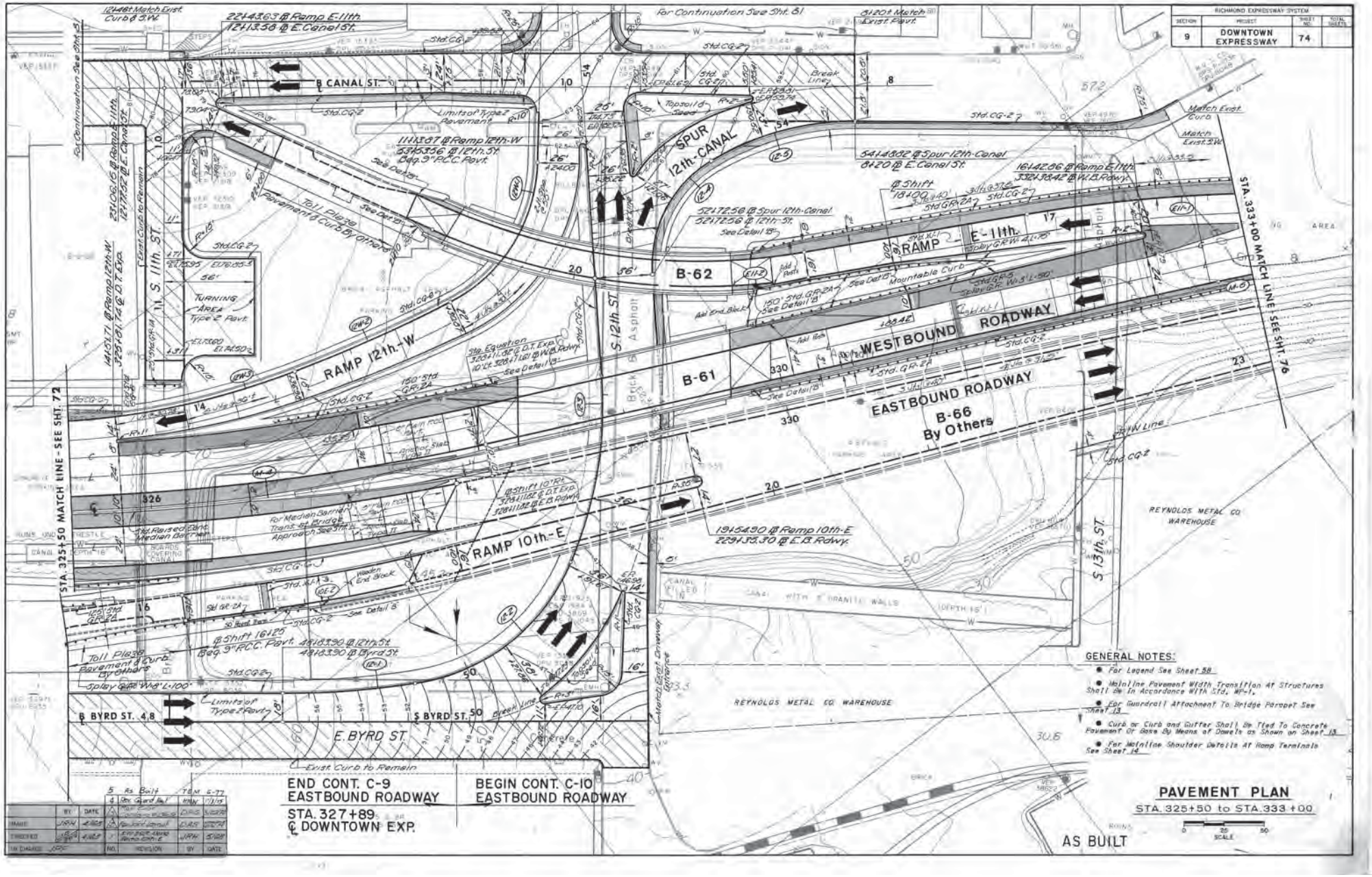
RICHMOND EXPRESSWAY SYSTEM

	SHEET NO.	TOTAL SHEETS
TOLL FACILITIES	9	38


END CONT. C-8
STA. 228+43.31 BK.
℄ DOWNTOWN EXP.
BEGIN CONT. C-9
STA. 289+00.00 AHD
℄ DOWNTOWN EXP.
RICHMOND EXPRESSWAY SYSTEM
SECTION 9
PROJECT DOWNTOWN EXPRESSWAY
SHEET NO. 58
TOTAL SHEETS
W. CANAL ST.
E. CANAL ST.
℄ CANAL ST.
S. 1st. ST.
RAMP E-CANAL
WESTBOUND ROADWAY
℄ DOWNTOWN EXPRESSWAY
EASTBOUND ROADWAY
RAMP BYRD-E
℄ BYRD ST.
S. FOUSHEE ST.
STA. 17+00.81 BK.
STA. 11+00.00 AHD.
STA. 295+50 MATCH LINE - SEE SHT. 60
PAVEMENT PLAN LEGEND:
Proposed Bit. Concrete Shoulders
Mainline Shoulder at Ramp Terminals 7" Plain P.C.C. Base Overlaid With 2" Bit. Concrete Pavement, Type S-5
Proposed Bit. Concrete Overlay of Existing Pavement
Proposed P.C.C. Sidewalk
Bridge Approach Slab With Surface Treatment
Bridge Approach Slab Without Surface Treatment
Construction Joint
Transverse Expansion Joint
Transverse Joint
Longitudinal Joint
GENERAL NOTES:
All Standards Referred To On The Grading Or Pavement Plans Are Virginia Department of Highways Standard Drawings.
For Miscellaneous Details Not Shown On Pavement Plans See Sheets 13 & 14
Guardrail Installation Shall Be In Accordance With Std. GR-4 and Std. GR-5 Except As Noted On The Plans.
For Detail A and B See Sheet 13
Limits of Pavement Patches Are Not Shown Outside Of Areas To Be Completely Repaved. These Patches Will Be Equivalent To The Existing Pavement Section Or Type 2 Pavement Patches Unless Otherwise Noted and Will Be Constructed Before Final Surfacing Is Done.
PAVEMENT PLAN
STA. 289+00 to STA. 295+50
AS BUILT
SCALE 0 25 50

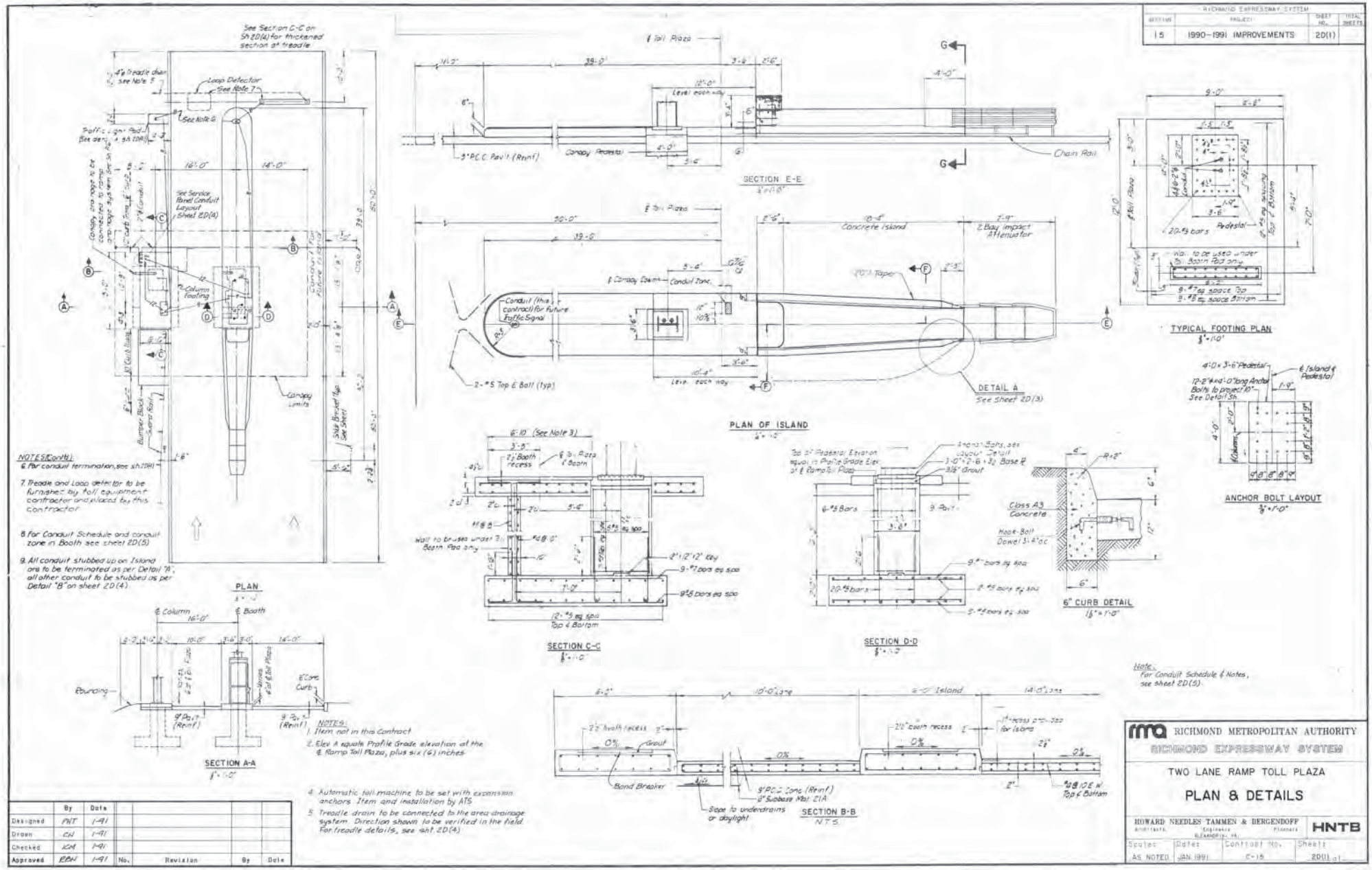

RICHMOND EXPRESSWAY SYSTEM
SECTION 9
PROJECT DOWNTOWN EXPRESSWAY
SHEET NO. 60
TOTAL SHEETS
E. CANAL ST.
℄ CANAL ST.
RAMP E-CANAL
RAMP BYRD-E
WESTBOUND ROADWAY
℄ DOWNTOWN EXPRESSWAY
EASTBOUND ROADWAY
E. BYRD ST.
℄ BYRD ST.
S. 2nd ST.
S. 3rd ST.
B-54
B-55
B-1
W-901
W-902
W-903
PARKING LOT (BY OTHERS)
Commonwealth Natural Gas Co.
STA. 295+50 MATCH LINE - SEE SHT. 58
STA. 303+00 MATCH LINE - SEE SHT. 66
GENERAL NOTES
For Legend See Sheet 58
For Details Of Raised Concrete Median Barrier Transition At Bridge Piers See Sheet 19
Cross Street Bridge Approach Slab Surface Treatment: Tack Coat With 0.1 Gal./Sq. Yd. RC-70 Bituminous Material, Surface With 1½" Bituminous Concrete, Type I-2 and 1" Bituminous Concrete, Type S-5.
Curb or Curb and Gutter Shall Be Tied To Concrete Pavement Or Base By Means of Dowels as Shown on Sheet 13
For Mainline Shoulder Details At Ramp Terminals See Sheet 14
PAVEMENT PLAN
STA. 295+50 to STA. 303+00
AS BUILT


RICHMOND EXPRESSWAY SYSTEM
9
DOWNTOWN EXPRESSWAY
72
252
STATE PROJECT 0060-127-102,C-502
E. CANAL ST.
STA. 91+25 MATCH LINE - SEE SHT. 79
STA. 19+25 MATCH LINE - SEE SHT. 79
S. 9th. ST.
S. 10th. ST.
STA. 318+00 MATCH LINE - SEE SHT. 68
STA. 325+50 MATCH LINE - SEE SHT. 74
B-602
B-60
WESTBOUND ROADWAY
EASTBOUND ROADWAY
RAMP 12th.-W
℄ DOWNTOWN EXPRESSWAY
RAMP 10th.-E
B BYRD ST.
E. BYRD ST.
MATCH LINE - SEE SHEET 73A
GENERAL NOTES:
• For Legend See Sheet 58
• For Details Of Raised Concrete Median Barrier Transition At Bridge Piers See Sheet 12
• Cross Street Bridge Approach Slab Surface Treatment: Tack Coat With 0.1 Gal./Sq. Yd. RC-70 Bituminous Material. Surface With 1½" Bituminous Concrete, Type I-2 and 1" Bituminous Concrete, Type S-5.
PAVEMENT PLAN
STA. 318+00 to STA. 325+50
AS BUILT
SCALE


RICHMOND EXPRESSWAY SYSTEM
SECTION 9
PROJECT DOWNTOWN EXPRESSWAY
SHEET NO. 74
TOTAL SHEETS
B CANAL ST.
SPUR 12th-CANAL
RAMP E-11th.
RAMP 12th.-W
RAMP 10th.-E
WESTBOUND ROADWAY
EASTBOUND ROADWAY
B-62
B-61
B-66 By Others
S. 12th. ST.
S. 11th. ST.
S. 13th. ST.
E. BYRD ST.
B BYRD ST.
S BYRD ST.
STA. 325+50 MATCH LINE - SEE SHT. 72
STA. 333+00 MATCH LINE - SEE SHT. 76
REYNOLDS METAL CO WAREHOUSE
Toll Plaza Pavement & Curb By others
Limits of Type 2 Pavt.
Exist. Curb to Remain
END CONT. C-9 EASTBOUND ROADWAY
STA. 327+89 ℄ DOWNTOWN EXP.
BEGIN CONT. C-10 EASTBOUND ROADWAY
GENERAL NOTES:
For Legend See Sheet 58
Mainline Pavement Width Transition At Structures Shall Be In Accordance With Std. WP-1.
For Guardrail Attachment To Bridge Parapet See Sheet 13
Curb or Curb and Gutter Shall Be Tied To Concrete Pavement Or Base By Means of Dowels as Shown on Sheet 13
For Mainline Shoulder Details At Ramp Terminals See Sheet 14
PAVEMENT PLAN
STA. 325+50 to STA. 333+00
AS BUILT

DTE RAMP TOLL PLAZAS

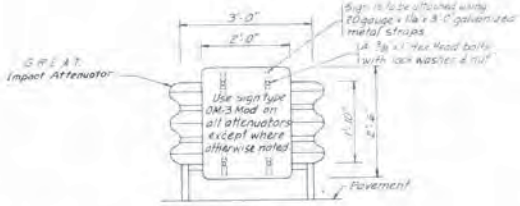
11TH ST RAMP WIDENING PLANS


RICHMOND EXPRESSWAY SYSTEM
SECTION 15 | PROJECT 1990-1991 IMPROVEMENTS | SHEET NO. 20(1)
PLAN OF ISLAND
SECTION E-E
SECTION C-C
SECTION D-D
SECTION A-A
SECTION B-B
DETAIL A
TYPICAL FOOTING PLAN
ANCHOR BOLT LAYOUT
6" CURB DETAIL
NOTES (Cont'd)
6. For conduit termination, see sh 20(1)
7. Treadle and Loop detector to be furnished by Toll equipment contractor and placed by this contractor.
8. For Conduit Schedule and conduit zone in Booth see sheet 20(5)
9. All conduit stubbed up on Island are to be terminated as per Detail "A", all other conduit to be stubbed as per Detail "B" on sheet 20(4).
NOTES:
1. Item not in this Contract
2. Elev A equals Profile Grade elevation at the ℄ Ramp Toll Plaza, plus six (6) inches
4. Automatic toll machine to be set with expansion anchors. Item and installation by ATS
5. Treadle drain to be connected to the area drainage system. Direction shown to be verified in the field. For treadle details, see sht. 20(4)
Note: For Conduit Schedule & Notes, see sheet 20(5).
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
TWO LANE RAMP TOLL PLAZA
PLAN & DETAILS
HOWARD NEEDLES TAMMEN & BERGENDOFF
HNTB
Scale: AS NOTED | Date: JAN 1991 | Contract No. C-15 | Sheet: 20(1) of
Designed PNT 1-91
Drawn CH 1-91
Checked KM 1-91
Approved EBH 1-91
No. Revision By Date

RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
I 5	1990-1991 IMPROVEMENTS	2D(2)	

Colors
Alternating black and reflectorized yellow stripes

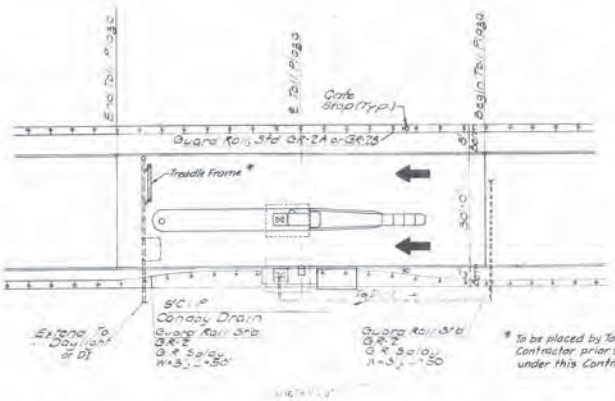
OM-3 Modified
1" = 1'-0"



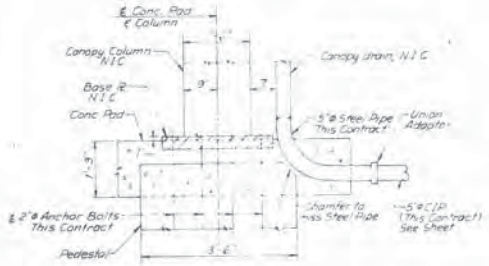
SIGN ATTACHMENT DETAIL
¾" = 1'-0"

Note:
Signs are to be as specified in the current manual on Uniform Traffic Control Devices for Highways & Street, by the Federal Highway Administration.

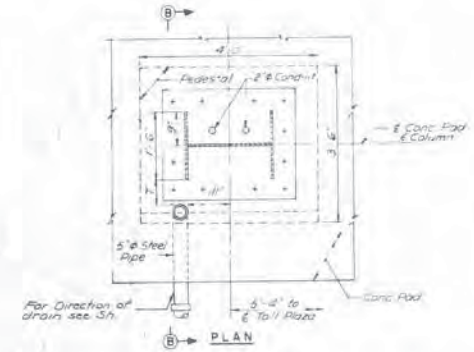
ATTENUATOR SIGNING DETAILS



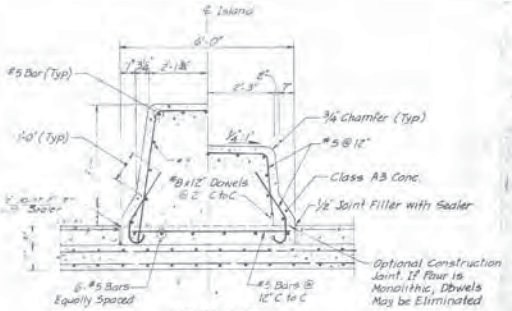
* To be placed by Toll Equipment Contractor prior to the paving, under this Contract



SECTION B-B
¾" = 1'-0"



RAMP CANOPY DRAIN
¾" = 1'-0"



SECTION F-F
¾" = 1'-0"

Note:
For Conduit Schedule, see sheet 2D (5)

	By	Date				
Designed	PAT	1-91				
Drawn	CN	1-91				
Checked	ICM	1-91				
Approved	RBN	1-91	No.	Revision	By	Date

LEGEND:
- o Traffic Signal (N.I.C.)
- * Automatic Toll Machine
- Toll Booth (N.I.C.)

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

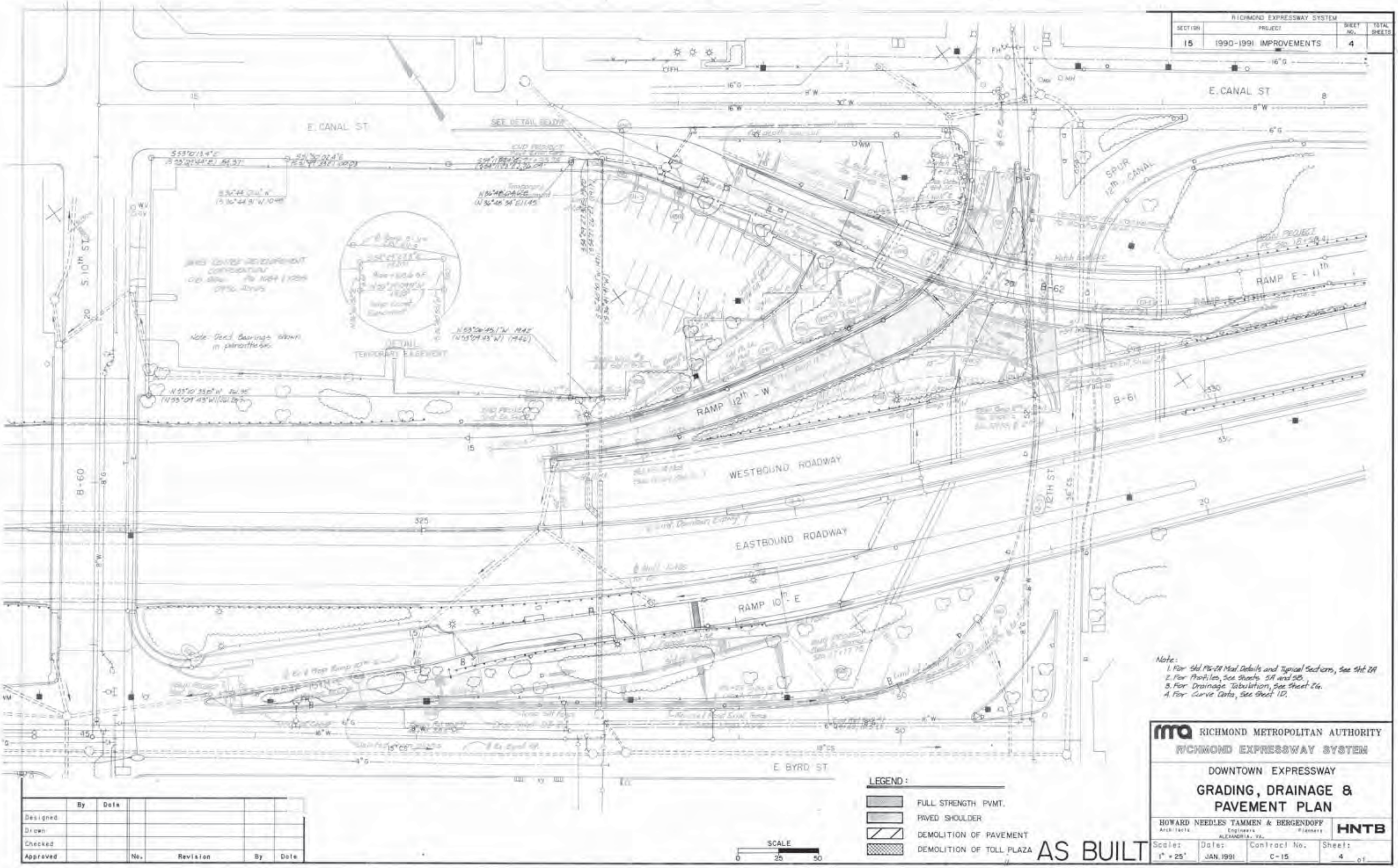
TWO LANE RAMP TOLL PLAZA

DETAILS

HOWARD NEEDLES TAMMEN & BERGENDOFF
Architects Engineers Planners
ALEXANDRIA, VA.

HNTB

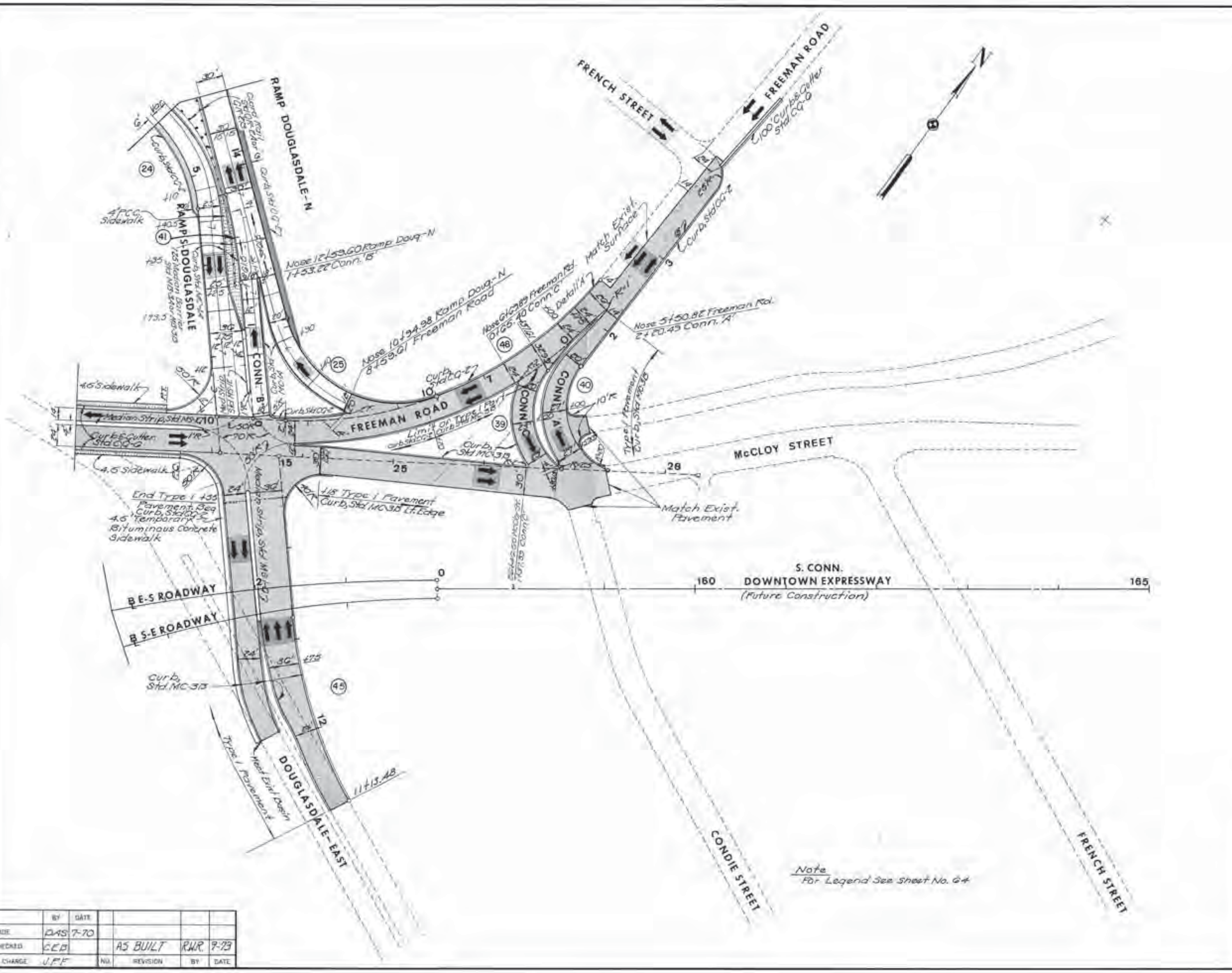
Scale:	Date:	Contract No.	Sheet:
AS NOTED	JAN. 1991	C-15	2D(2) of


RICHMOND EXPRESSWAY SYSTEM
SECTION
PROJECT
SHEET NO.
TOTAL SHEETS
15
1990-1991 IMPROVEMENTS
4
E. CANAL ST
SEE DETAIL BELOW
S. 10TH ST
SPUR 11th CANAL
RAMP E - 11th
B-62
B-61
RAMP 12th - W
WESTBOUND ROADWAY
EASTBOUND ROADWAY
RAMP 10th - E
12TH ST
B-60
325
330
DETAIL
TEMPORARY EASEMENT
E. BYRD ST
Note:
1. For Std. PG-2A Mod. Details and Typical Sections, See Sht. 2A
2. For Profiles, See Sheets 5A and 5B.
3. For Drainage Tabulation, See Sheet 26.
4. For Curve Data, See Sheet 1D.
LEGEND:
FULL STRENGTH PVMT.
PAVED SHOULDER
DEMOLITION OF PAVEMENT
DEMOLITION OF TOLL PLAZA
SCALE
0
25
50
AS BUILT
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
DOWNTOWN EXPRESSWAY
GRADING, DRAINAGE & PAVEMENT PLAN
HOWARD NEEDLES TAMMEN & BERGENDOFF
Architects Engineers Planners
ALEXANDRIA, VA.
HNTB
Scale: 1" = 25'
Date: JAN. 1991
Contract No. C-15
Sheet: 4
By
Date
Designed
Drawn
Checked
Approved
No.
Revision
By
Date

DOUGLASDALE RAMP TOLL PLAZA

ORIGINAL PLANS

RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
4	BELTLINE EXPRESSWAY	75	155



Note
For Legend See Sheet No. 64

AS BUILT

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
BELTLINE EXPRESSWAY

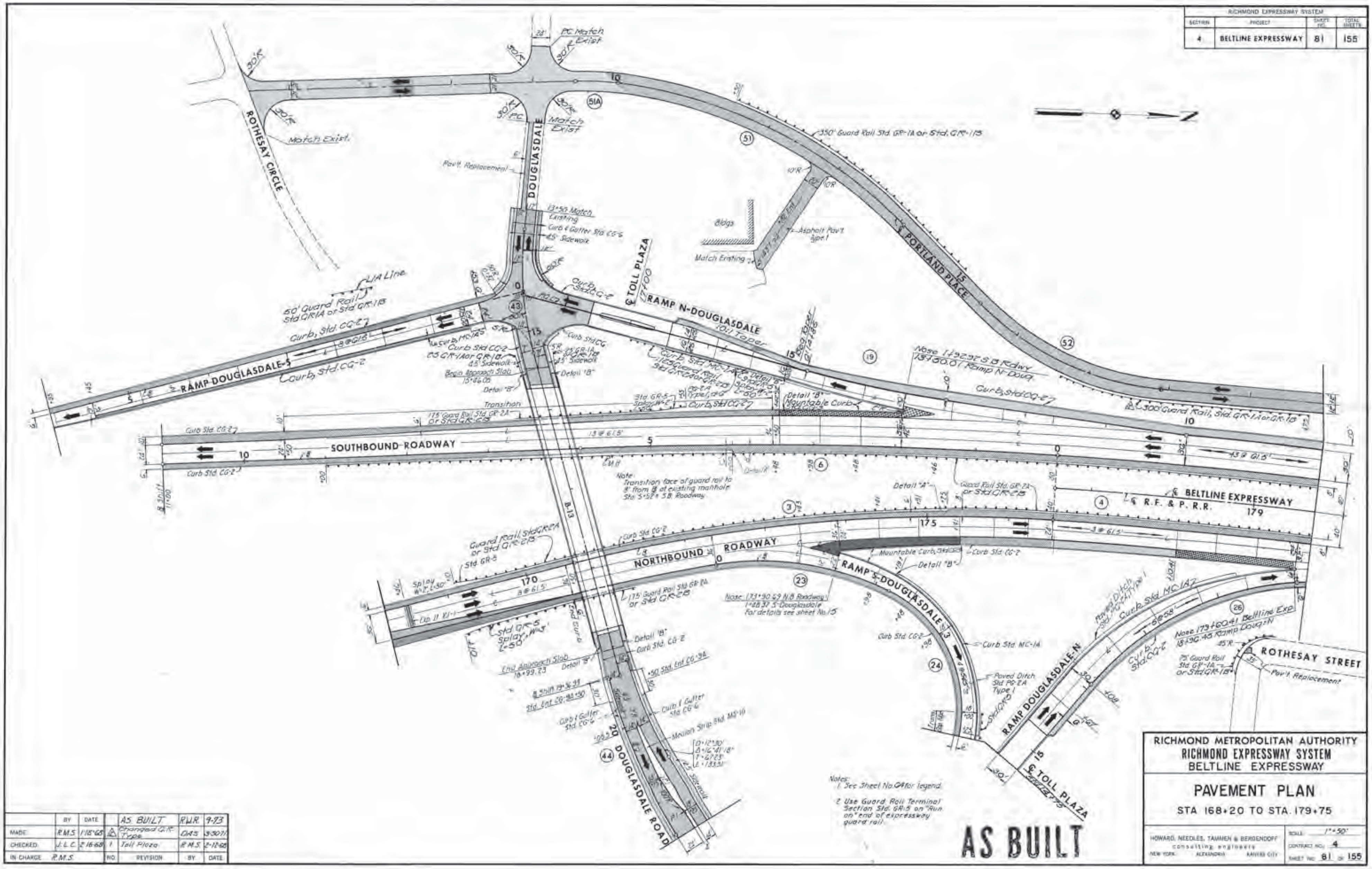
PAVEMENT PLAN

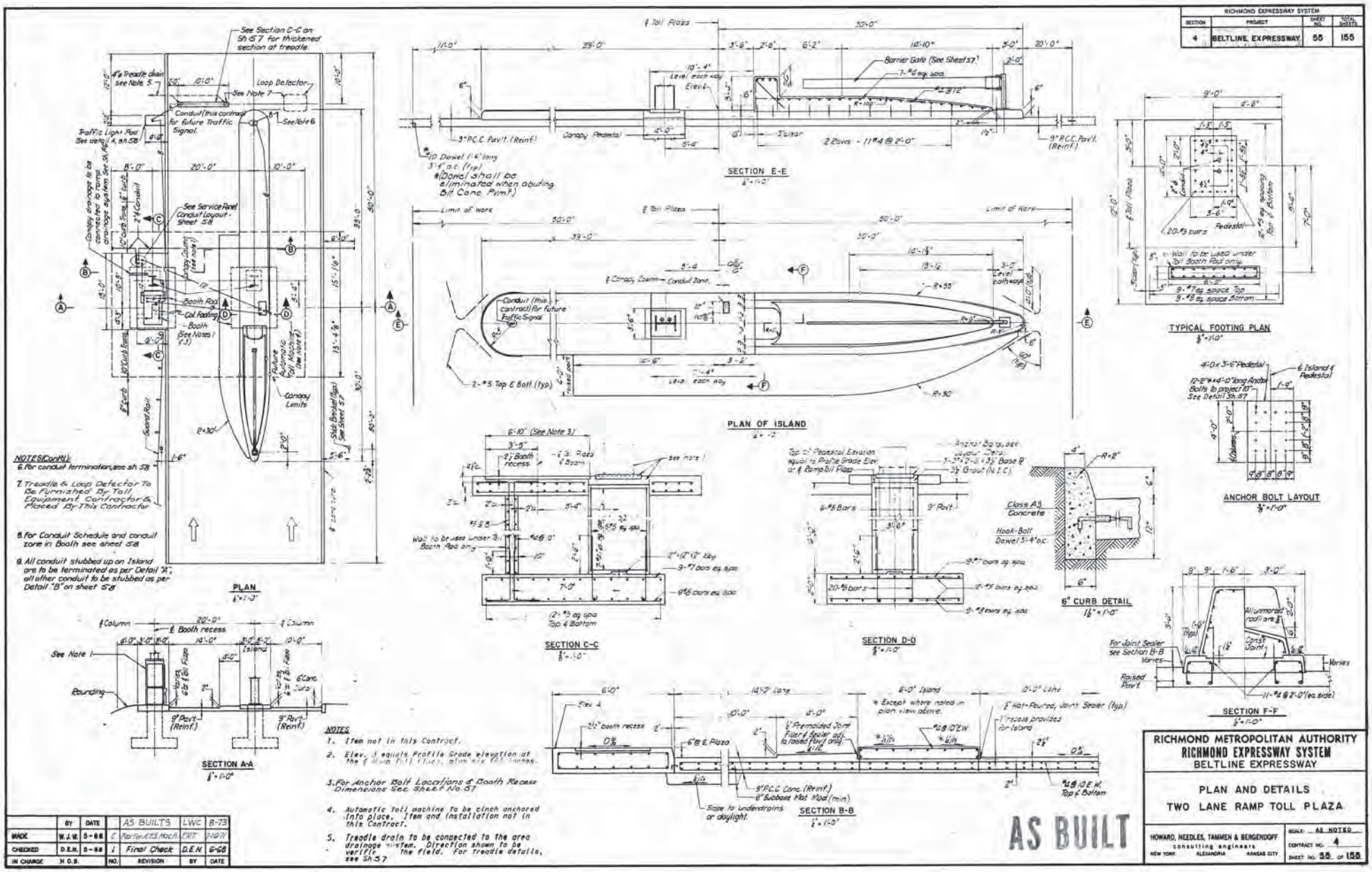
STA. 10+50 TO STA. 165+00

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY

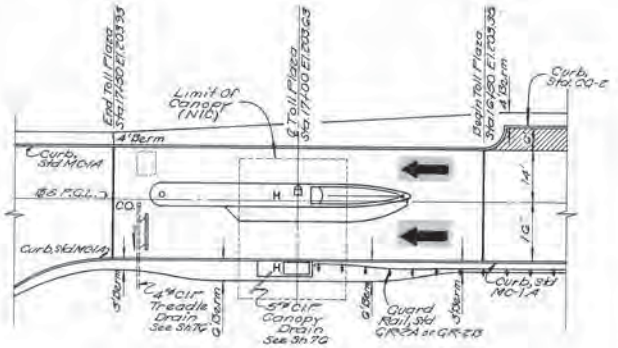
SCALE 1"=50'
CONTRACT NO. 4
SHEET NO. 75 OF 155

	BY	DATE				
MADE	DAS	7-70				
CHECKED	CEB			AS BUILT	RWR	7-73
IN CHARGE	JFF		NO.	REVISION	BY	DATE


RICHMOND EXPRESSWAY SYSTEM
SECTION 4 PROJECT BELTLINE EXPRESSWAY SHEET NO. 81 TOTAL SHEETS 155
ROTHESAY CIRCLE
DOUGLASDALE
PORTLAND PLACE
RAMP DOUGLASDALE-S
RAMP N-DOUGLASDALE
SOUTHBOUND ROADWAY
NORTHBOUND ROADWAY
RAMP S-DOUGLASDALE
RAMP DOUGLASDALE-N
℄ BELTLINE EXPRESSWAY
℄ R.F. & P. R.R.
℄ TOLL PLAZA
ROTHESAY STREET
DOUGLASDALE ROAD
350' Guard Rail Std. GR-1A or Std. GR-1B
300' Guard Rail, Std. GR-1A or GR-1B
Notes:
1. See Sheet No. 64 for legend.
2. Use Guard Rail Terminal Section Std. GR-5 on "Run on" end of expressway guard rail.
AS BUILT
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
BELTLINE EXPRESSWAY
PAVEMENT PLAN
STA 168+20 TO STA. 179+75
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY
SCALE 1"=50'
CONTRACT NO. 4
SHEET NO. 81 OF 155
AS BUILT RWR 9-73
Changed G.R. Type DAS 3-30-71
Toll Plaza RMS 2-12-68
MADE R.M.S. 1-18-68
CHECKED J.L.C. 2-16-68
IN CHARGE R.M.S.

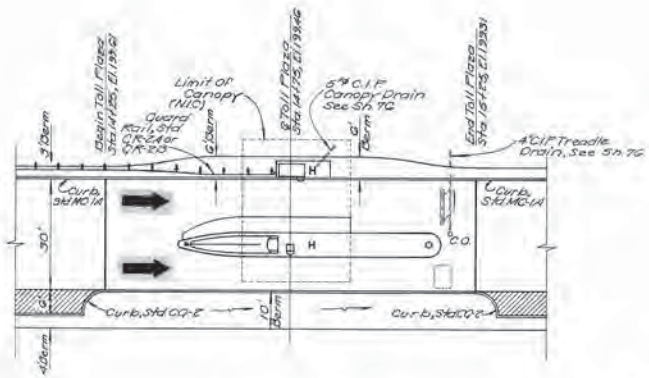

RICHMOND EXPRESSWAY SYSTEM
SECTION 4 | PROJECT BELTLINE EXPRESSWAY | SHEET NO. 55 | TOTAL SHEETS 155
PLAN
SECTION A-A
SECTION C-C
SECTION D-D
SECTION E-E
SECTION B-B
SECTION F-F
PLAN OF ISLAND
TYPICAL FOOTING PLAN
ANCHOR BOLT LAYOUT
6" CURB DETAIL
NOTES:
1. Item not in this Contract.
2. Elev. A equals Profile Grade elevation at the ℄ Main Toll Plaza, plus six tenths inches.
3. For Anchor Bolt Locations & Booth Recess Dimensions See Sheet No. 57
4. Automatic toll machine to be cinch anchored into place. Item and installation not in this Contract.
5. Treadle drain to be connected to the area drainage system. Direction shown to be verified in the field. For treadle details, see Sh. 57
NOTES (Cont'd):
6. For conduit termination, see sh. 58
7. Treadle & Loop Detector To Be Furnished By Toll Equipment Contractor & Placed By This Contractor
8. For Conduit Schedule and conduit zone in Booth see sheet 58
9. All conduit stubbed up on Island are to be terminated as per Detail "A"; all other conduit to be stubbed as per Detail "B" on sheet 58
AS BUILTS
AS BUILT
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
BELTLINE EXPRESSWAY
PLAN AND DETAILS
TWO LANE RAMP TOLL PLAZA
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY
SCALE: AS NOTED
CONTRACT NO. 4
SHEET NO. 55 OF 155

RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
4	BELTLINE EXPRESSWAY	56	155



RAMP N-DOUGLASDALE
Scale 1/16"=1'-0"

NOTES
1. For Profiles See Sh. No. 39 & 40
2. C.O. in Pavement - 6" C.I. 90° Elbow & 6" x 1926 -10 Supreme Floor Level Cleanout



RAMP DOUGLASDALE-N
Scale 1/16"=1'-0"

AS BUILT

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
BELTLINE EXPRESSWAY

MISCELLANEOUS
TOLL PLAZA DETAILS

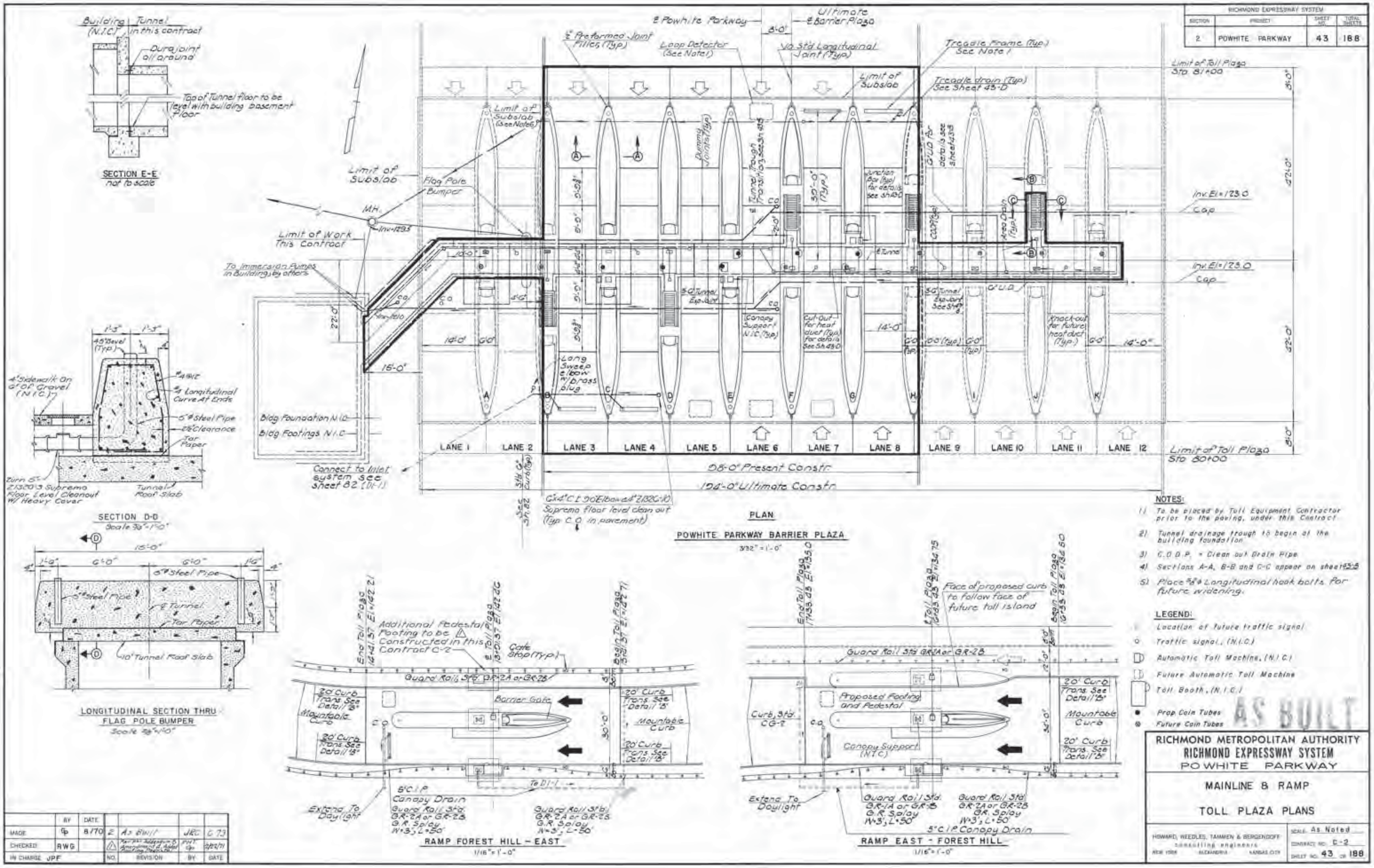
	BY	DATE				
MADE	DAS	8-70				
CHECKED	KMG	8-70		AS BUILT	LWC	8-73
IN CHARGE	J.F.F.		NO.	REVISION	BY	DATE

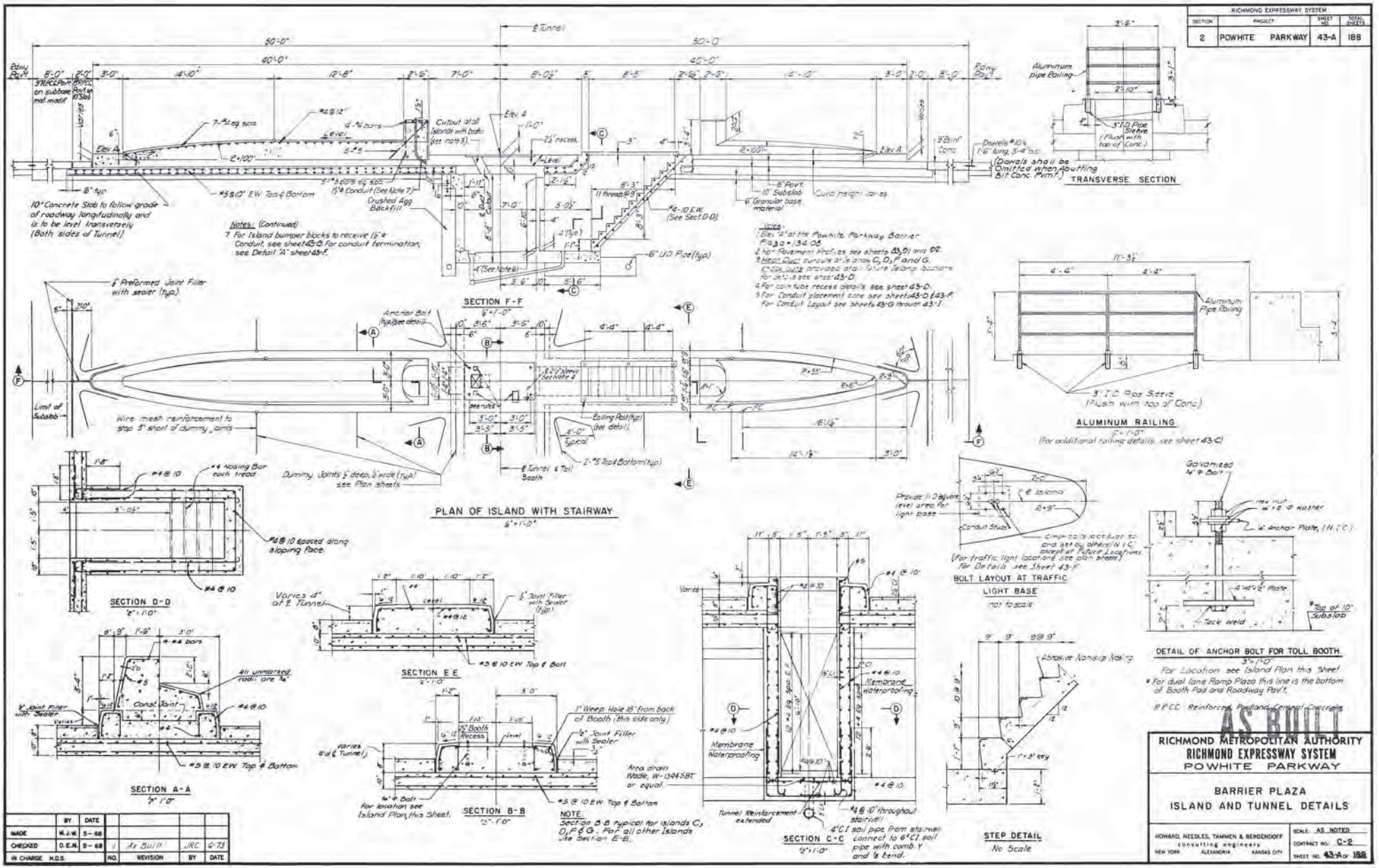
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY

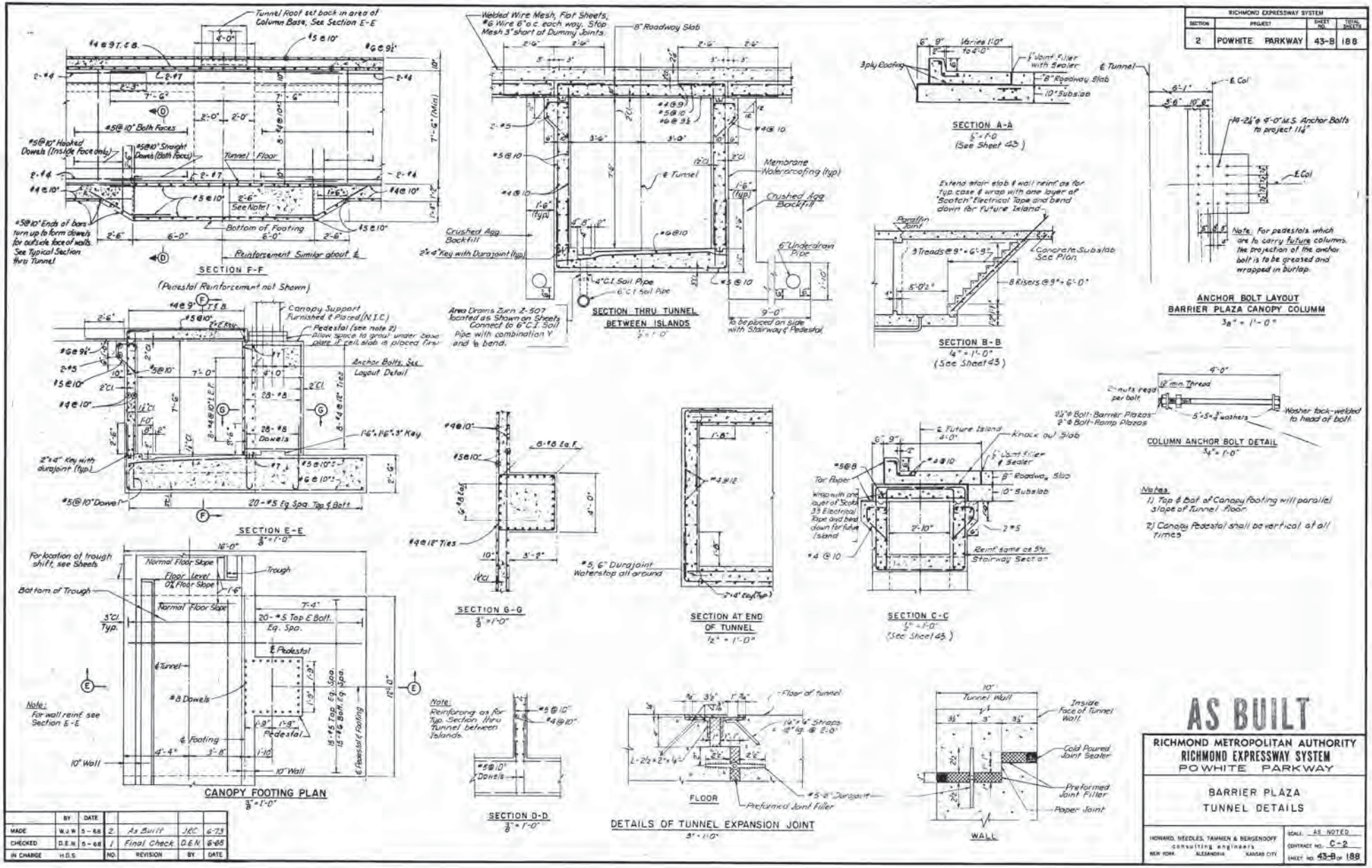
SCALE As Noted
CONTRACT NO. 4
SHEET NO. 56 OF 155

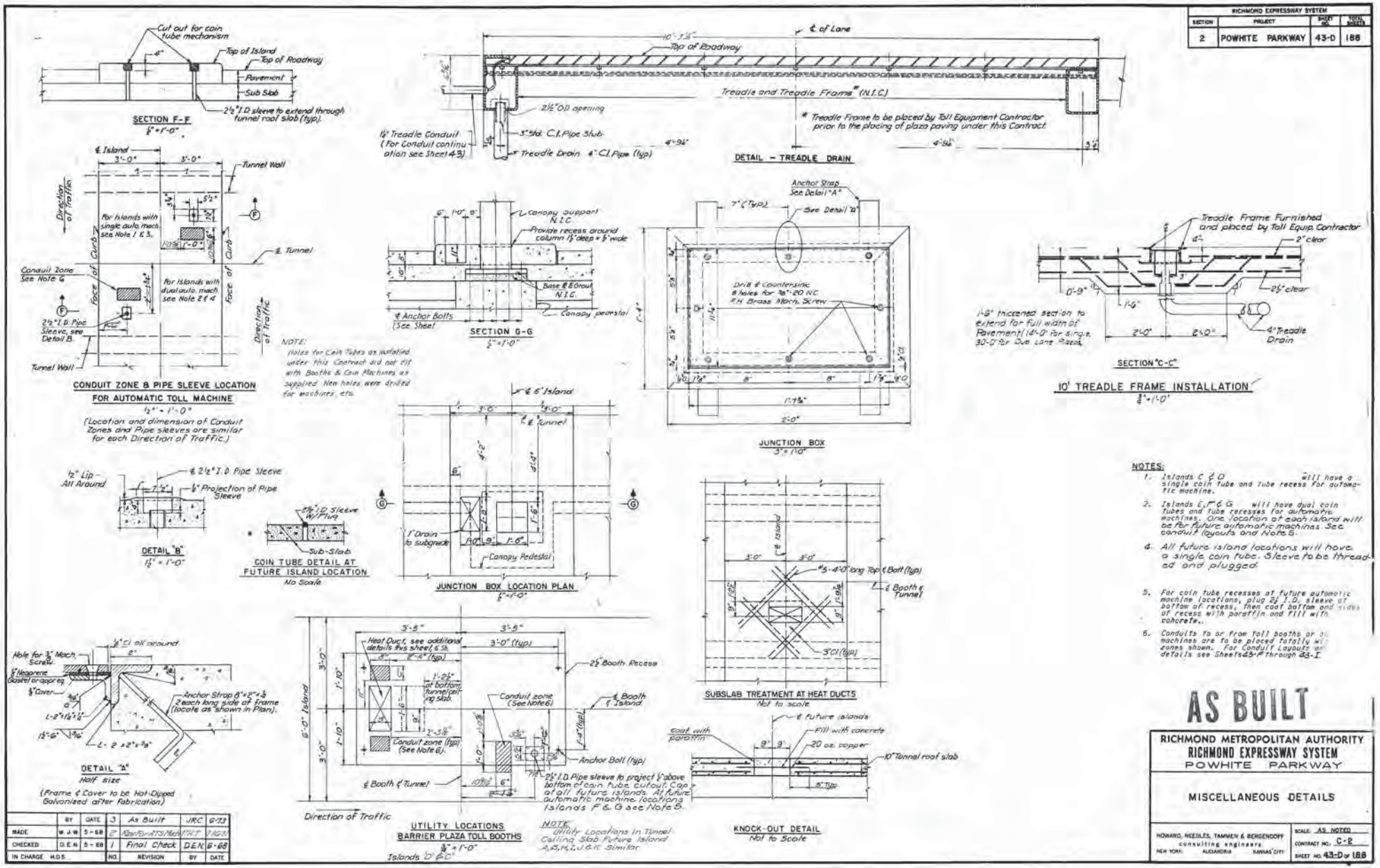
NORTHBOUND POWHITE PARKWAY TOLL PLAZA

ORIGINAL PLANS - ADMINISTRATION BUILDING & TOLL PLAZA


RICHMOND EXPRESSWAY SYSTEM
SECTION 2 POWHITE PARKWAY SHEET NO. 43 TOTAL SHEETS 188
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY
MAINLINE & RAMP
TOLL PLAZA PLANS
HOWARD, NEEDLES, TAMMEN & BERGENDOFF consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY
SCALE As Noted
CONTRACT NO. C-2
SHEET NO. 43 OF 188
AS BUILT
PLAN
POWHITE PARKWAY BARRIER PLAZA
3/32" = 1'-0"
SECTION E-E
not to scale
SECTION D-D
Scale 3/8"=1'-0"
LONGITUDINAL SECTION THRU FLAG POLE BUMPER
Scale 3/8"=1'-0"
RAMP FOREST HILL - EAST
1/16" = 1'-0"
RAMP EAST - FOREST HILL
1/16" = 1'-0"
LANE 1
LANE 2
LANE 3
LANE 4
LANE 5
LANE 6
LANE 7
LANE 8
LANE 9
LANE 10
LANE 11
LANE 12
98'-0" Present Constr.
194'-0" Ultimate Constr.
Limit of Toll Plaza Sta. 81+00
Limit of Toll Plaza Sta. 80+00
NOTES:
1) To be placed by Toll Equipment Contractor prior to the paving, under this Contract.
2) Tunnel drainage trough to begin at the building foundation.
3) C.O.D.P. = Clean out Drain Pipe
4) Sections A-A, B-B and C-C appear on sheet 43-B
5) Place 5/8"ø Longitudinal hook bolts for future widening.
LEGEND:
Location of future traffic signal
Traffic signal, (N.I.C.)
Automatic Toll Machine, (N.I.C.)
Future Automatic Toll Machine
Toll Booth, (N.I.C.)
Prop Coin Tubes
Future Coin Tubes
MADE
CHECKED RWG
IN CHARGE JPF
2 As Built
REVISION


RICHMOND EXPRESSWAY SYSTEM
SECTION 2 PROJECT POWHITE PARKWAY SHEET NO. 43-A TOTAL SHEETS 188
TRANSVERSE SECTION
SECTION F-F
PLAN OF ISLAND WITH STAIRWAY
ALUMINUM RAILING
BOLT LAYOUT AT TRAFFIC LIGHT BASE
not to scale
DETAIL OF ANCHOR BOLT FOR TOLL BOOTH
STEP DETAIL
No Scale
SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D
SECTION E E
AS BUILT
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY
BARRIER PLAZA
ISLAND AND TUNNEL DETAILS
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY
SCALE AS NOTED
CONTRACT NO. C-2
SHEET NO. 43-A of 188


RICHMOND EXPRESSWAY SYSTEM
SECTION 2 PROJECT POWHITE PARKWAY SHEET NO. 43-B TOTAL SHEETS 188
SECTION F-F
(Pedestal Reinforcement not Shown)
SECTION THRU TUNNEL BETWEEN ISLANDS
SECTION A-A
SECTION B-B
ANCHOR BOLT LAYOUT
BARRIER PLAZA CANOPY COLUMN
COLUMN ANCHOR BOLT DETAIL
SECTION E-E
SECTION G-G
SECTION AT END OF TUNNEL
SECTION C-C
CANOPY FOOTING PLAN
SECTION D-D
DETAILS OF TUNNEL EXPANSION JOINT
WALL
FLOOR
Notes
1) Top & Bot of Canopy footing will parallel slope of Tunnel Floor.
2) Canopy Pedestal shall be vertical at all times.
AS BUILT
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY
BARRIER PLAZA
TUNNEL DETAILS
HOWARD, NEEDLES, TAMMEN & BERGENDOFF consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY
SCALE: AS NOTED
CONTRACT NO. C-2
SHEET NO. 43-B OF 188
MADE W.J.W 5-68
CHECKED D.E.N 5-68
IN CHARGE H.D.S.
2 As Built JJC 6-73
1 Final Check D.E.N 6-69
NO. REVISION BY DATE


RICHMOND EXPRESSWAY SYSTEM
SECTION 2 PROJECT POWHITE PARKWAY SHEET NO. 43-D TOTAL SHEETS 188
SECTION F-F
DETAIL – TREADLE DRAIN
CONDUIT ZONE & PIPE SLEEVE LOCATION FOR AUTOMATIC TOLL MACHINE
SECTION G-G
JUNCTION BOX
SECTION "C-C"
10' TREADLE FRAME INSTALLATION
DETAIL "B"
COIN TUBE DETAIL AT FUTURE ISLAND LOCATION
JUNCTION BOX LOCATION PLAN
SUBSLAB TREATMENT AT HEAT DUCTS
DETAIL "A"
UTILITY LOCATIONS BARRIER PLAZA TOLL BOOTHS
KNOCK-OUT DETAIL
NOTES:
AS BUILT
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY
MISCELLANEOUS DETAILS
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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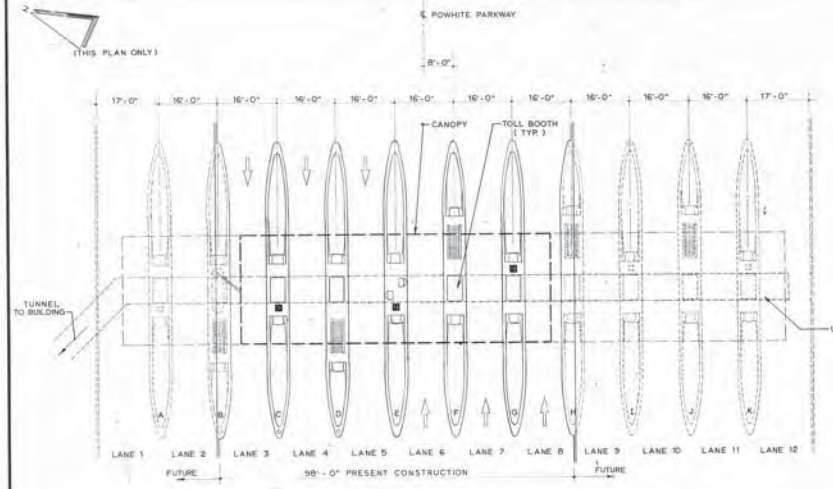
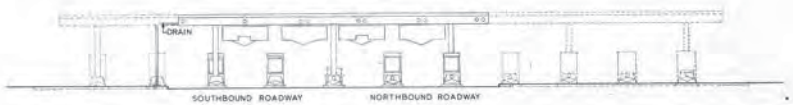
NEW YORK ALEXANDRIA KANSAS CITY
SCALE: AS NOTED
CONTRACT NO. C-2
SHEET NO 43-D OF 188

RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
TF-2	TOLL FACILITIES	12	26

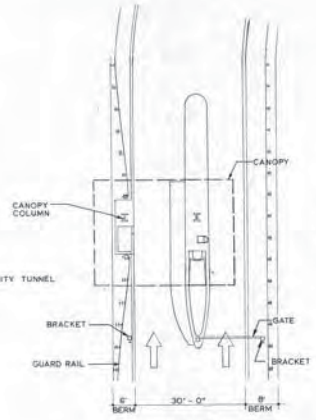


PLAN

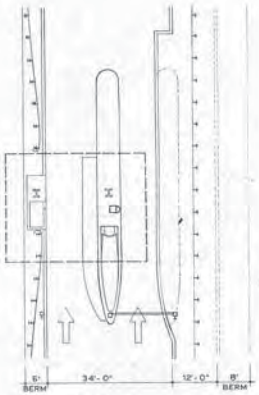


EAST ELEVATION

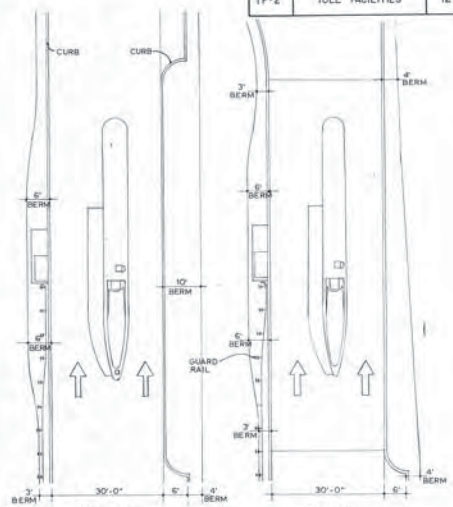
WEST ELEVATION



PLAN
RAMP FOREST HILL - EAST

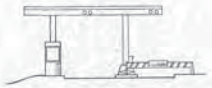


PLAN
RAMP EAST - FOREST HILL



PLAN
RAMP DOUGLASDALE - NORTH

PLAN
RAMP NORTH - DOUGLASDALE



ELEVATION
RAMP FOREST HILL - EAST

ELEVATION
RAMP EAST - FOREST HILL

ELEVATION
RAMP DOUGLASDALE - NORTH

ELEVATION
RAMP NORTH - DOUGLASDALE

NOTE
THIS SHEET IS INTENDED FOR ORIENTATION ONLY. PARTS OF THE WORK SHOWN HERE ARE INCLUDED IN THIS CONTRACT.

	BY	DATE
MADE	R.M.	7-31-71
CHECKED	K.L.	2-20-72
IN CHARGE	J.P.F.	

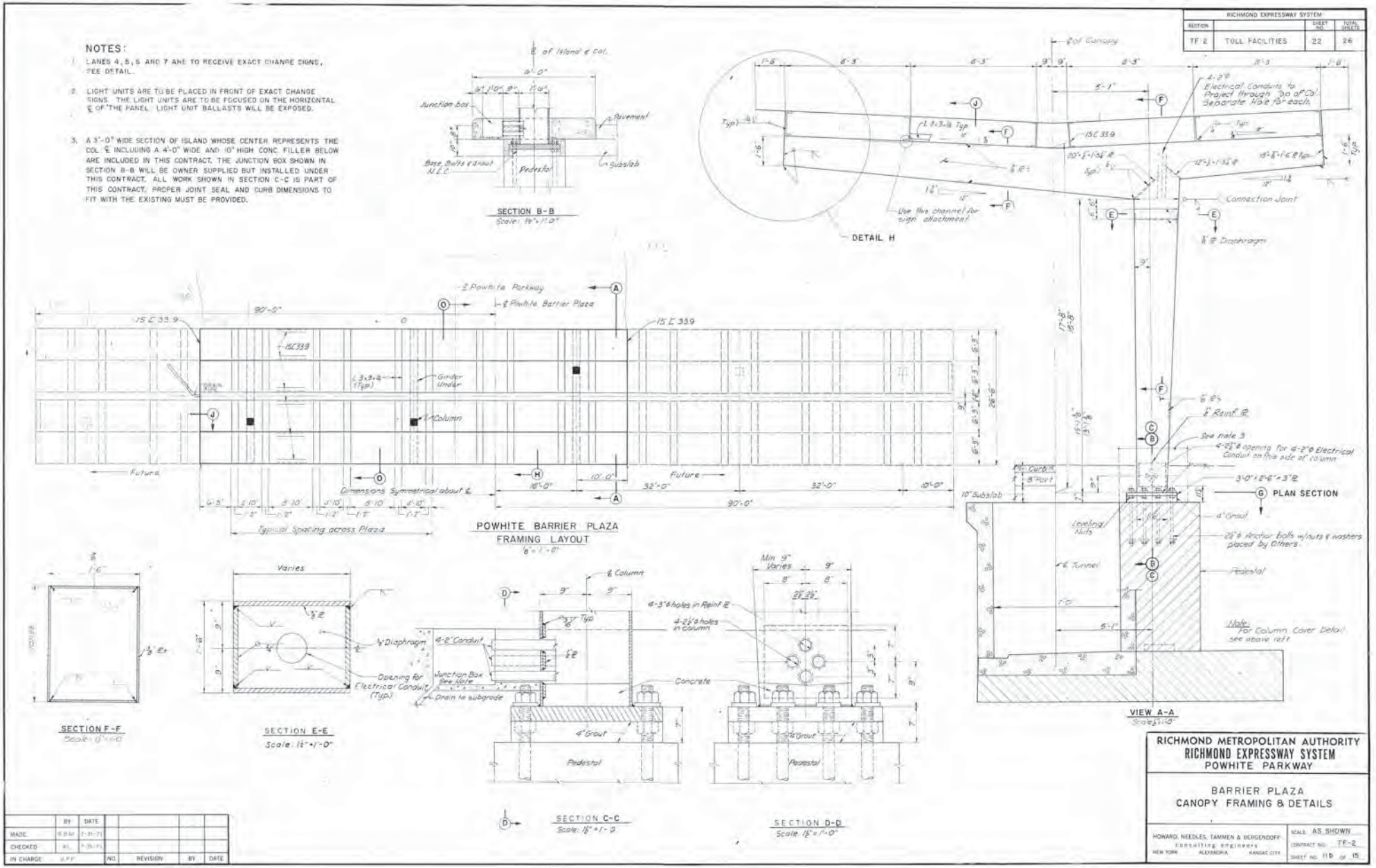
NO.	REVISION	BY	DATE

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY

TOLL FACILITIES
PLANS & ELEVATIONS

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY

SCALE: 1/16" = 1'-0"
CONTRACT NO.: TF-2
SHEET NO. 18 OF 15


NOTES:
1. LANES 4, 5, 6 AND 7 ARE TO RECEIVE EXACT CHANGE SIGNS, SEE DETAIL.
2. LIGHT UNITS ARE TO BE PLACED IN FRONT OF EXACT CHANGE SIGNS. THE LIGHT UNITS ARE TO BE FOCUSED ON THE HORIZONTAL ℄ OF THE PANEL. LIGHT UNIT BALLASTS WILL BE EXPOSED.
3. A 3'-0" WIDE SECTION OF ISLAND WHOSE CENTER REPRESENTS THE COL. ℄ INCLUDING A 4'-0" WIDE AND 10" HIGH CONC. FILLER BELOW ARE INCLUDED IN THIS CONTRACT. THE JUNCTION BOX SHOWN IN SECTION B-B WILL BE OWNER SUPPLIED BUT INSTALLED UNDER THIS CONTRACT. ALL WORK SHOWN IN SECTION C-C IS PART OF THIS CONTRACT. PROPER JOINT SEAL AND CURB DIMENSIONS TO FIT WITH THE EXISTING MUST BE PROVIDED.
RICHMOND EXPRESSWAY SYSTEM
SECTION TF-2 TOLL FACILITIES SHEET NO. 22 TOTAL SHEETS 26
SECTION B-B
DETAIL H
POWHITE BARRIER PLAZA FRAMING LAYOUT
SECTION F-F
SECTION E-E
SECTION C-C
SECTION D-D
PLAN SECTION
VIEW A-A
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY
BARRIER PLAZA
CANOPY FRAMING & DETAILS
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
SCALE AS SHOWN
CONTRACT NO. TF-2
SHEET NO. 116 OF 15

RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
TF-2	UTILITY BUILDING	2	26

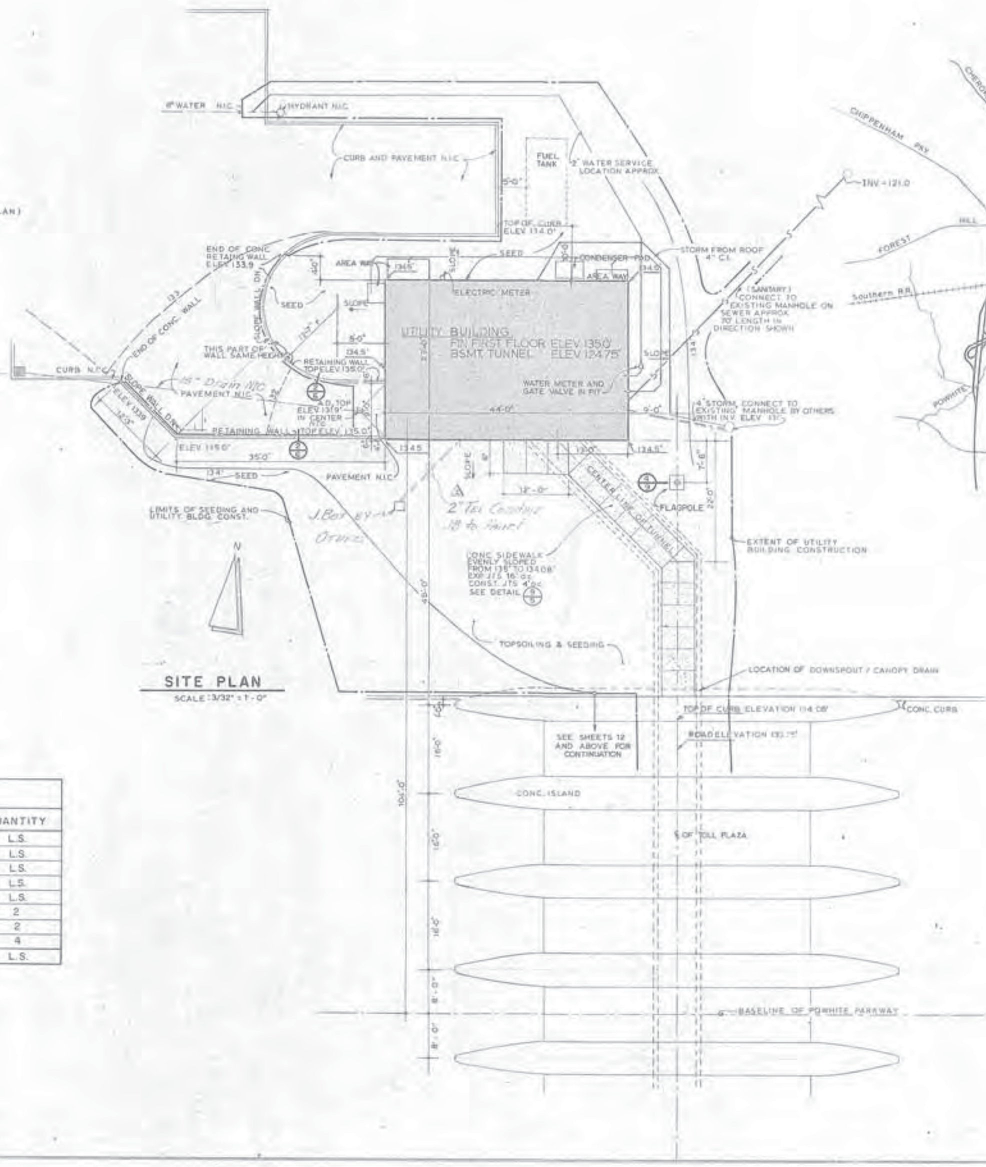
INDEX OF SHEETS

UTILITY BUILDING

LEGEND

- 133 — EXISTING GRADE LINES
- 134 — PROPOSED GRADE LINES
- PROPOSED SIDEWALK OR CONCRETE (IN PLAN)
- PROPOSED CONC. CURB N.I.C.
- PROPOSED CONC. RETAINING WALL
- EXTENT OF CONTRACT, SEE NOTE
- —S—S— PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- DETAIL NUMBER / SHEET NUMBER
- N.I.C. NOT IN CONTRACT
- A.D. AREA DRAIN

NOTE:
FOR UTILITY BLDG. AND IMMEDIATE SURROUNDINGS.



SITE PLAN

SCALE: 3/32" = 1'-0"

VICINITY MAP

NO SCALE

SUMMARY OF PAY ITEMS		
ITEM DESCRIPTION	UNIT	QUANTITY
Utility Building - General Construction	—	L.S.
Utility Building and Tunnel - Plumbing	—	L.S.
Utility Building and Tunnel - HVAC	—	L.S.
Utility Building and Tunnel - Electrical	—	L.S.
Canopy at Barrier Plaza	—	L.S.
Ramp Plaza With Canopy	EACH	2
Ramp Plaza Without Canopy	EACH	2
Installation of Toll Booth at Barrier Toll Plaza	EACH	4
Mobilization	—	L.S.

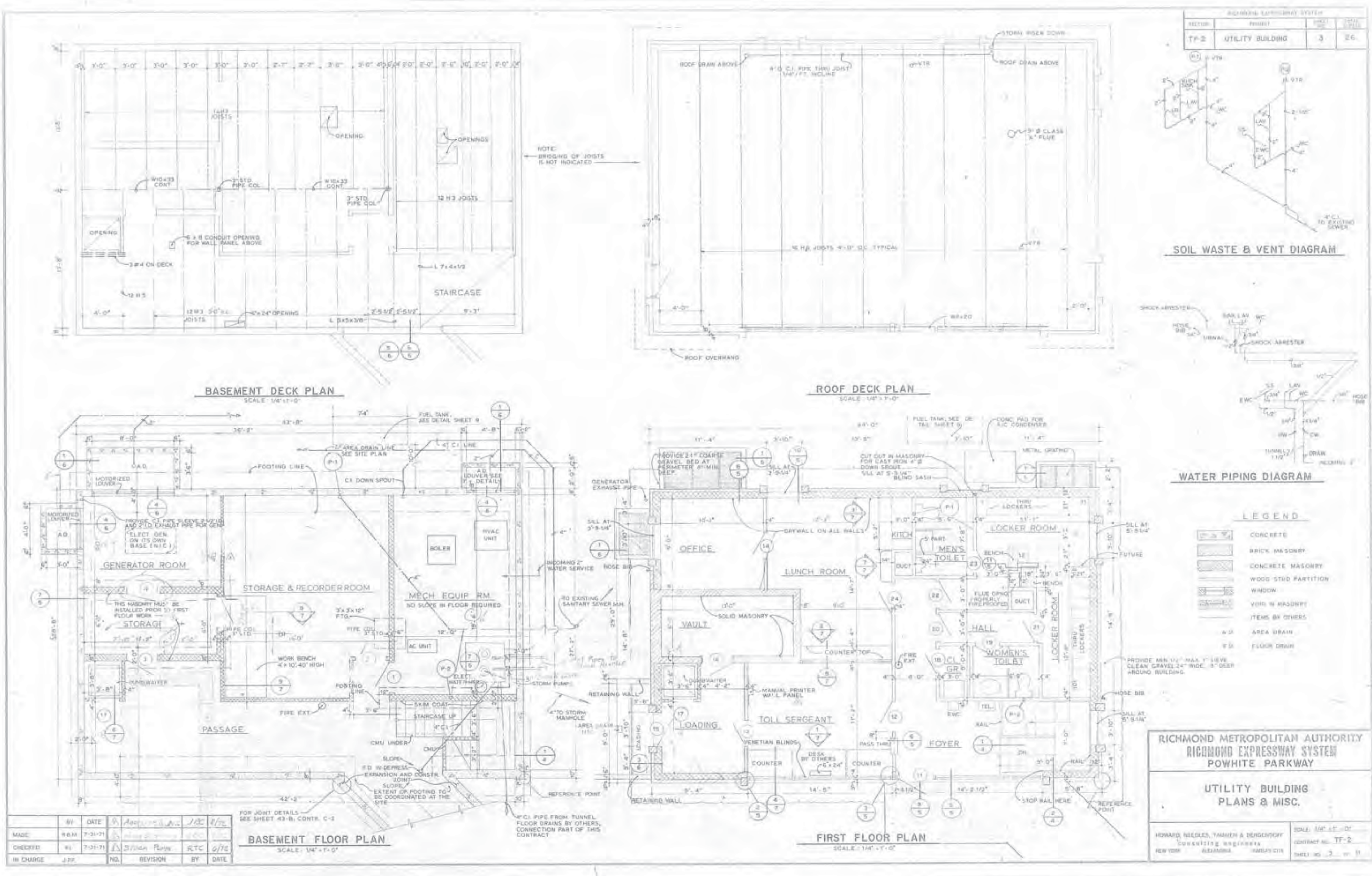
	BY	DATE	NO.	REVISION	BY	DATE
MADE	RL					
CHECKED	RL			4" Storm Pipe	RTC	
IN CHARGE						

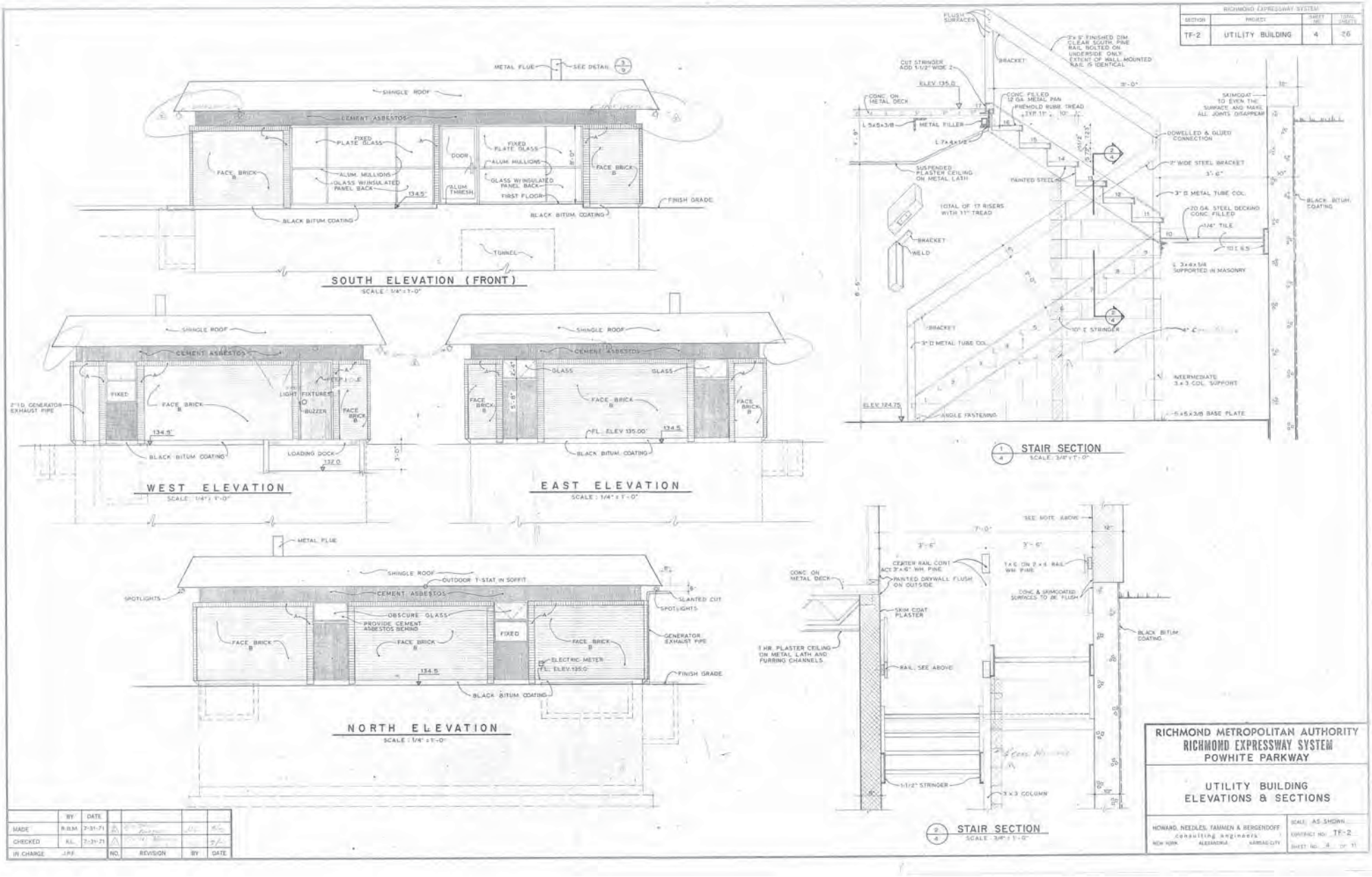
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY

UTILITY BUILDING
SITE PLANS

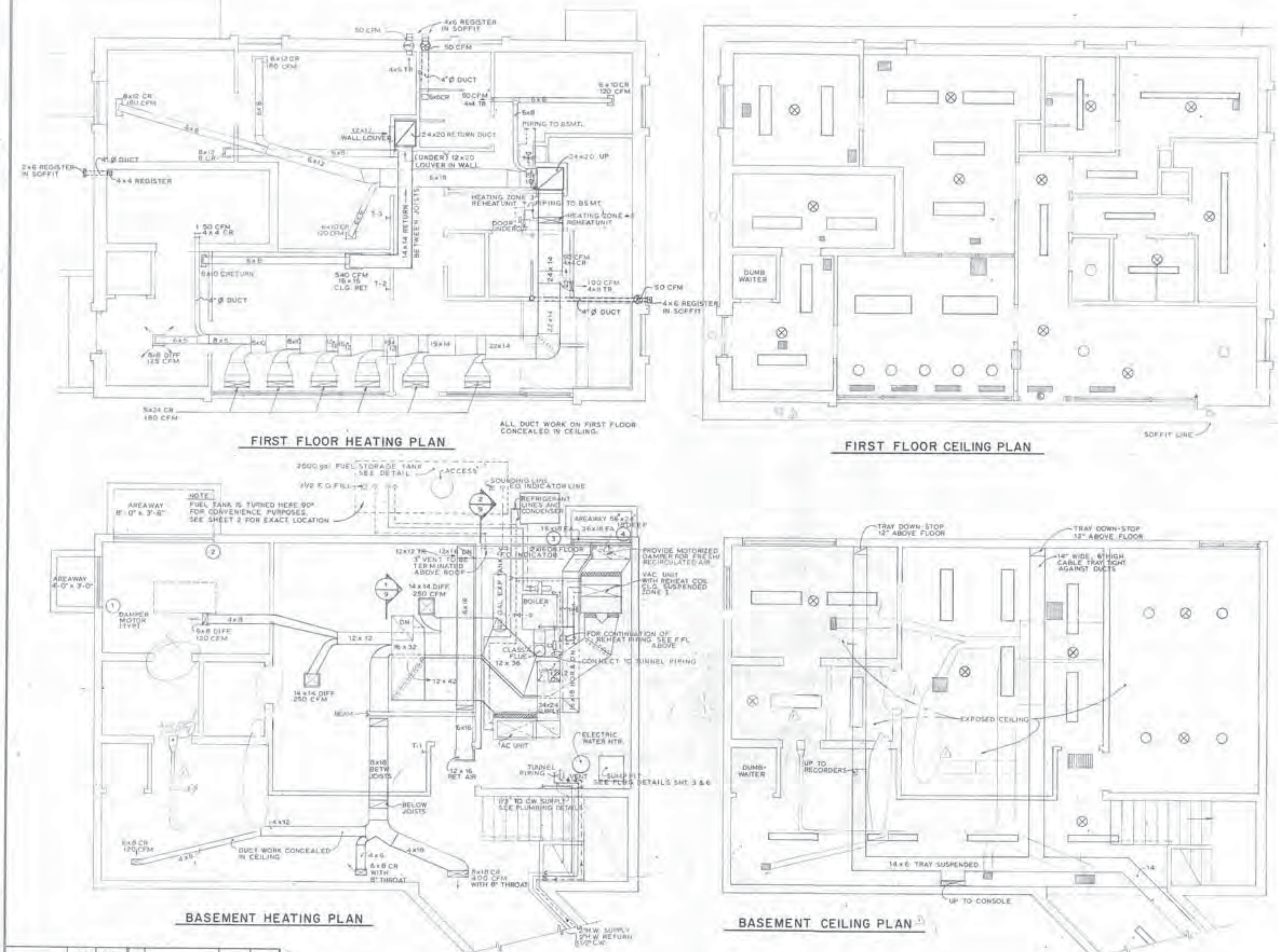
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY

SCALE: AS SHOWN
CONTRACT NO. TF-2
SHEET NO. 2 OF 11


BASEMENT DECK PLAN
SCALE: 1/4" = 1'-0"
ROOF DECK PLAN
SCALE: 1/4" = 1'-0"
SOIL WASTE & VENT DIAGRAM
WATER PIPING DIAGRAM
LEGEND
CONCRETE
BRICK MASONRY
CONCRETE MASONRY
WOOD STUD PARTITION
WINDOW
VOID IN MASONRY
ITEMS BY OTHERS
AREA DRAIN
FLOOR DRAIN
BASEMENT FLOOR PLAN
SCALE: 1/4" = 1'-0"
FIRST FLOOR PLAN
SCALE: 1/4" = 1'-0"
GENERATOR ROOM
STORAGE & RECORDER ROOM
MECH EQUIP RM
STORAGE
PASSAGE
STAIRCASE
OFFICE
LUNCH ROOM
VAULT
LOCKER ROOM
MEN'S TOILET
HALL
WOMEN'S TOILET
LOADING
TOLL SERGEANT
FOYER
TF-2
UTILITY BUILDING
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY
UTILITY BUILDING
PLANS & MISC.
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
Consulting engineers


SOUTH ELEVATION (FRONT)
SCALE : 1/4" = 1'-0"
WEST ELEVATION
SCALE : 1/4" = 1'-0"
EAST ELEVATION
SCALE : 1/4" = 1'-0"
NORTH ELEVATION
SCALE : 1/4" = 1'-0"
STAIR SECTION
SCALE : 3/4" = 1'-0"
STAIR SECTION
SCALE : 3/4" = 1'-0"
RICHMOND EXPRESSWAY SYSTEM
TF-2
UTILITY BUILDING
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY
UTILITY BUILDING
ELEVATIONS & SECTIONS
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA HARRISBURG
SCALE: AS SHOWN
CONTRACT NO: TF-2

RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
TF-2	UTILITY BUILDING	8	26



LEGEND

- PARTITION
- 6 x 12 DUCT (SIZE)
- FLUORESCENT FIXTURE
- INCANDESCENT FIXTURE
- EMERGENCY INCAND. FIXTURE
- CLG. AIR REGISTER
- EXHAUST FAN

ABBREVIATIONS

- TR TOP REGISTER
- CR CEILING REGISTER
- CFM CUB. FT / MIN.
- CW COLD WATER

MOTOR SCHEDULE

1	INLINE PUMP, TUNNEL HW. 3	37 GPM	42 FT HEAD	3/4 HP	208/3/60	
2	CIRCULATOR 1	12 GPM	12 FT HEAD	1/6 HP	115/1/60	
3	CIRCULATOR 2	12 GPM	12 FT HEAD	1/6 HP	115/1/60	
4	EXHAUST FAN, KITCHEN	50 CFM			115/1/60	50 W
5	EXHAUST FAN, MEN TOILET	50 CFM			115/1/60	50 W
6	EXHAUST FAN FEMALE TOILET	50 CFM			115/1/60	50 W
7	A/C AIRHANDL. UNIT	3000 CFM		2 HP	208/3/60	
8	CONDENSING UNIT 1	3000 CFM		2 HP	208/3/60	30 KW
9	CONDENSING UNIT 2	1300 CFM		1 HP	208/3/60	10 KW
10	HVAC UNIT	1300 CFM		1 HP	208/3/60	10 KW
11	OIL BURNER			1/3 HP	115/1/60	
12	DAMPER MOTOR 1	SEE BASEMENT HEATING PLAN		1/6 HP	115/1/60	
13	DAMPER MOTOR 2			1/6 HP	115/1/60	
14	DAMPER MOTOR 3			1/6 HP	115/1/60	
15	DAMPER MOTOR 4			1/6 HP	115/1/60	
16	SEWAGE EJECTOR			1/5 HP	115/1/60	
17	UNIT HEATER 1	BARRIER PL. BOOTHS		1/3 HP	115/1/60	
18	UNIT HEATER 2			1/3 HP	115/1/60	
19	UNIT HEATER 3			1/3 HP	115/1/60	
20	UNIT HEATER 4			1/3 HP	115/1/60	
21	TUNNEL HEATER 1			1/5 HP	115/1/60	
22	TUNNEL HEATER 2			1/5 HP	115/1/60	
23	DUMBWAITER			1 HP	208/3/60	
	FOR RAMPS. (TOTAL 4) ELECTROMODE ELECT. HEATER				240 V 1/60	3 KW

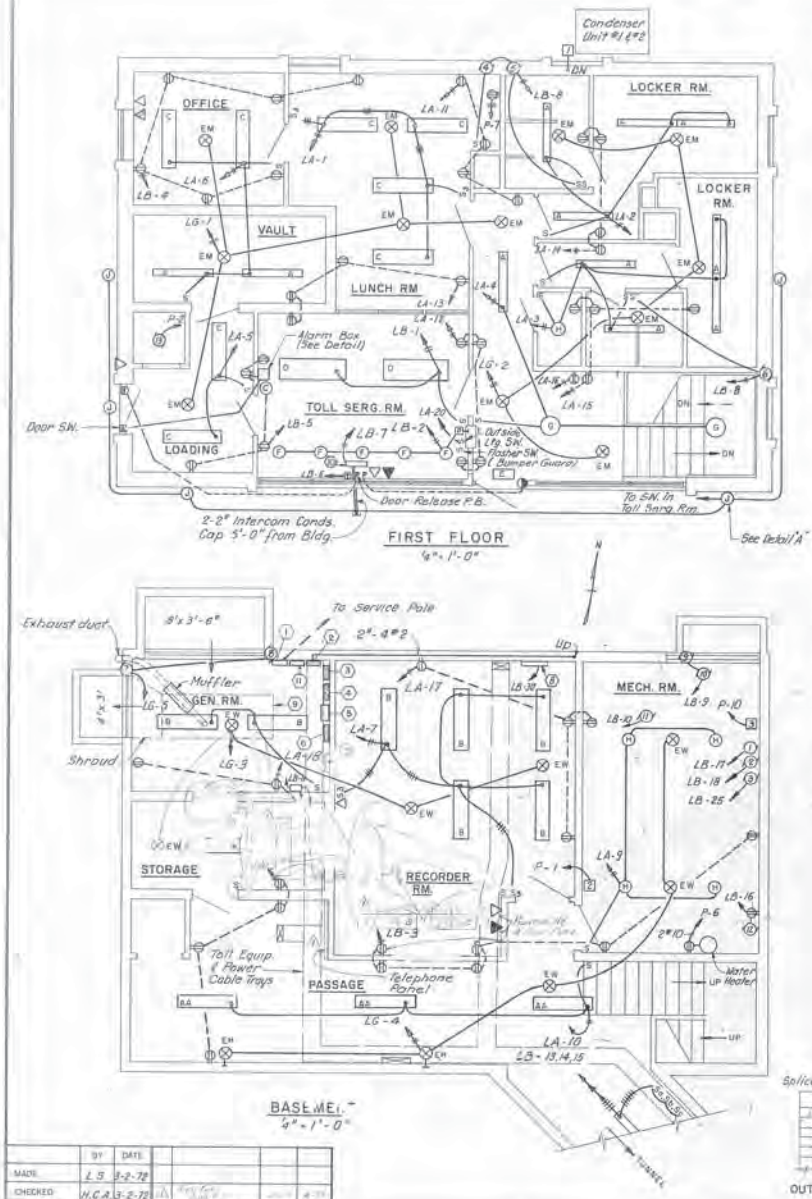
	BY	DATE				
MADE	R.&M.	7-31-71				
CHECKED	F.L.	7-31-71				
IN CHARGE	J.H.F.		NO.	REVISION	BY	DATE

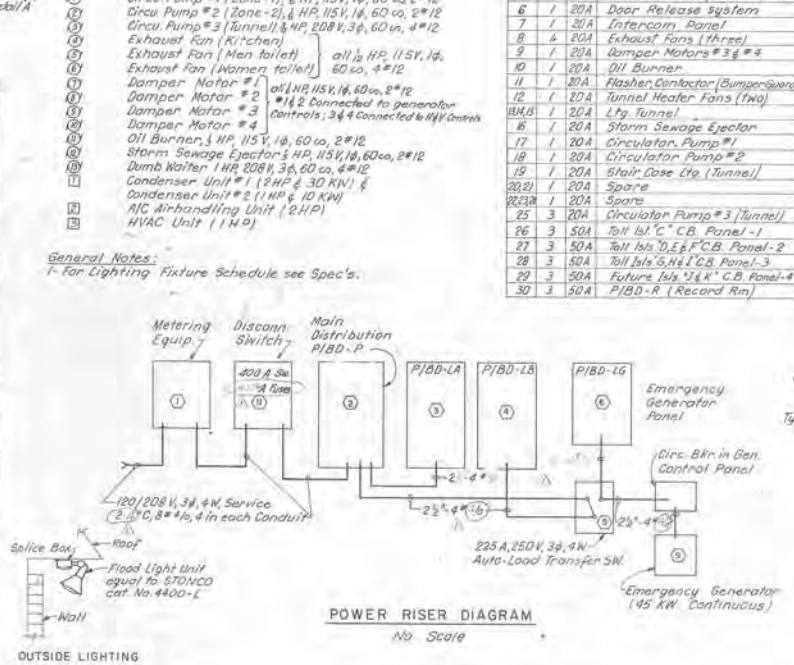
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY

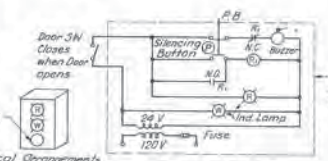
UTILITY BUILDING
HTG/AC AND REFL. CLG. PLAN

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY

SCALE: NOT TO SCALE
CONTRACT NO. TF-2
SHEET NO. 8 OF 11







LEGEND

- Fluorescent Fixture, Letter indicates type.
- (A) Incandescent Fixture, Letter indicates type.
- Emergency Light - In ceiling
- Emergency Light - Wall Mounted
- Exit Light
- Dimmer
- Duplex Wall Receptacle Outlet
- Range Receptacle
- S Single Pole Switch
- S_3 Three way Switch
- P Door Release system
- Telephone Outlet
- Intercom. System telephone Outlet
- C Electric Clock outlet
- T Transformer for Door Release system
- Panel Board
- Wiring Concealed in Walls or Ceiling
- Wiring Concealed in Floor
- LA-3 Home run with Panel & Circ. Designation

- (J) Current Transformer & Metering Equipment
- (1) Main Distribution Panel Board - P
- (2) Panel Board - LA
- (3) Panel Board - LB
- (4) Auto-Transfer Switch
- (5) Emergency Generator Panel - LG
- (6) Generator Control Panel
- (7) Recorder Room Panel Board - R
- (8) Generator Set (45 KW. Continuous)
- (M) Inter Com Panel
- (D) Disconnect SW. (400A) & Fuses (225 A)

- (1) Circu. Pump #1 (Zone-1), ⅛ HP, 115V, 1φ, 60 ∼, 2#12
- (2) Circu. Pump #2 (Zone-2), ⅛ HP, 115V, 1φ, 60 ∼, 2#12
- (3) Circu. Pump #3 (Tunnel), ¾ HP, 208V, 3φ, 60 ∼, 4#12
- (4) Exhaust Fan (Kitchen)
- (5) Exhaust Fan (Men toilet)
- (6) Exhaust Fan (Women toilet)
  all ½ HP, 115V, 1φ, 60 ∼, 4#12
- (7) Damper Motor #1
- (8) Damper Motor #2
- (9) Damper Motor #3
- (10) Damper Motor #4
  all ½ HP, 115V, 1φ, 60 ∼, 2#12 #1 & 2 Connected to generator Controls; 3 & 4 Connected to N&V Controls
- (11) Oil Burner, ⅓ HP, 115V, 1φ, 60 ∼, 2#12
- (12) Storm Sewage Ejector & HP, 115V, 1φ, 60 ∼, 2#12
- (13) Dumb Waiter 1 HP, 208V, 3φ, 60 ∼, 4#12
- (T) Condenser Unit #1 (2 HP & 30 KW) & Condenser Unit #2 (1 HP & 10 KW)
- (2) A/C Airhandling Unit (2 HP)
- (3) HVAC Unit (1 HP)

General Notes:
1- For Lighting Fixture Schedule see Spec's.

MAIN DISTRIBUTION PANEL-P

120/208 V, 3φ, 4W, 5N, 42 Poles, 600A BUS | Westinghouse Type C.D.P.

Circ. No.	Pole	Trip	Description
1	2	20A	AC. Air handling Unit (2 HP)
2	2	20A	Dumb Waiter (1 HP)
3	2	20A	Spare
4	3	20A	Spare
5	3	20A	Spare
6	2	30A	Elect. W.H. Utility (4 KW)
7	2	50A	Kitchen Unit (8.5 KW)
8	2	30A	Spare
9	3	30A	Spare
10	3	50A	HVAC Unit (1 HP & 10 KW)
11	3	50A	Spare
12	3	150A	Condensers #1 & #2 (@ 430 KW)
13	3	150A	Panel Board - LA
14	3	150A	Panel Board - LB
15	3		Space
16	3		Space

PANEL BOARD - LA

120/208 V, 3φ, 4W, 3N, 38 Poles, 225 A BUS | Westinghouse Type N8A

Circ. No.	Pole	Trip	Description
1, 2, 3, 4, 5, 6	1	20A	Ltg. 1st Floor
7, 8, 9, 10, 11, 12	1	20A	Ltg. Basement
13, 14, 15, 16, 17, 18	1	20A	Receptacles 1st Floor
19	1	20A	Elect. Water Cooler
20, 21, 22, 23	1	20A	Receptacles Basement
24	1	20A	Out side flood Ltg.
25	1	20A	Spare
26	1	20A	Spare
27	1	20A	Spare
28	1	20A	Spare
29, 30	1		Space
31, 32	1		Space

PANEL BOARD - LB

120/208 V, 3φ, 4W, 3N, 42 Poles, 225 A BUS | Westinghouse Type N8A

Circ. No.	Pole	Trip	Description
1, 2	1	20A	Ltg. 1st Floor
3, 4, 5	1	20A	Recept. 1st Fl. & Basement
6	1	20A	Door Release system
7	1	20A	Intercom Panel
8	4	20A	Exhaust Fans (three)
9	1	20A	Damper Motors #3 & #4
10	1	20A	Oil Burner
11	1	20A	Flasher, Contactor (Bumper Guard)
12	1	20A	Tunnel Heater Fans (two)
13, 14, 15	1	20A	Ltg. Tunnel
16	1	20A	Storm Sewage Ejector
17	1	20A	Circulator Pump #1
18	1	20A	Circulator Pump #2
19	1	20A	Stair Case Ltg. (Tunnel)
20, 21	1	20A	Spare
22, 23, 24	1	20A	Spare
25	3	20A	Circulator Pump #3 (Tunnel)
26	3	50A	Toll Isl's "C" C.B. Panel-1
27	3	50A	Toll Isls "D, E & F" C.B. Panel-2
28	3	50A	Toll Isls "G, H & I" C.B. Panel-3
29	3	50A	Future Isls "J & K" C.B. Panel-4
30	3	50A	P/BD-R (Record Rm)

PANEL BOARD - R

120/208 V, 3φ, 4W, 5N, 20 Poles, 100 A Bus | Westinghouse Type N8A

Circ. No.	Pole	Trip	Description
1 to 16	1	20A	Recorder Room Circs.
17 to 20	1		Spaces

PANEL BOARD - LG

120/208 V, 3φ, 4W, 3N, 10 Poles, 100 A BUS | Westinghouse Type N8A

Circ. No.	Pole	Trip	Description
1	1	20A	Ltg. 1st Floor (Emg.)
2	1	20A	Ltg. 1st Floor (Emg.)
3	1	20A	Ltg. Basement (Emg.)
4	1	20A	Ltg. Basement (Emg.)
5	1	20A	Damper Motors #1 & #2
6	1	20A	Spare
7	1	20A	Spare
8	1		Space
9	1		Space
10	1		Space

BY	DATE				
MADE	L.S.	3-2-73			
CHECKED	H.C.A.	3-2-73			
IN CHARGE	P.G.R.	NO.	REVISION	BY	DATE

RICHMOND EXPRESSWAY SYSTEM

SECTION	PROJECT	SHEET NO.	NO. SHEETS
TF2	UTILITY BUILDING	10	26

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

UTILITY BUILDING
ELECTRICAL

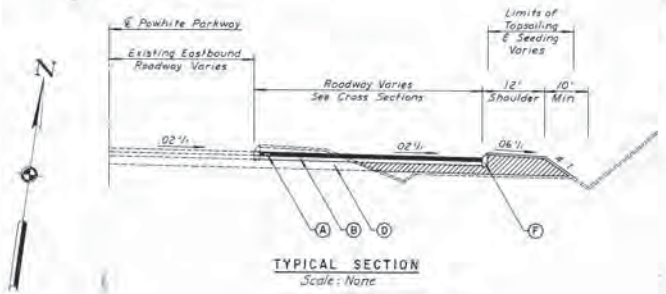
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK TALLAHASSEE KANSAS CITY

SCALE: AS NOTED
CONTRACT NO. TS-2
SHEET NO. 10 OF 27

NORTHBOUND POWHITE PARKWAY TOLL PLAZA

1978 WIDENING

RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
TF-4	POWHITE PARKWAY	1	



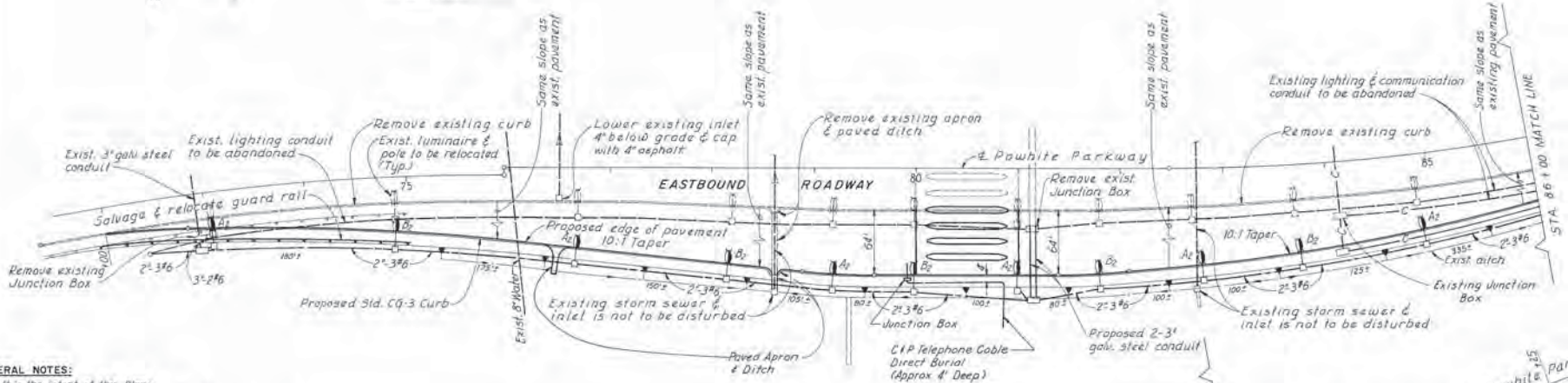
TYPICAL SECTION
Scale: None

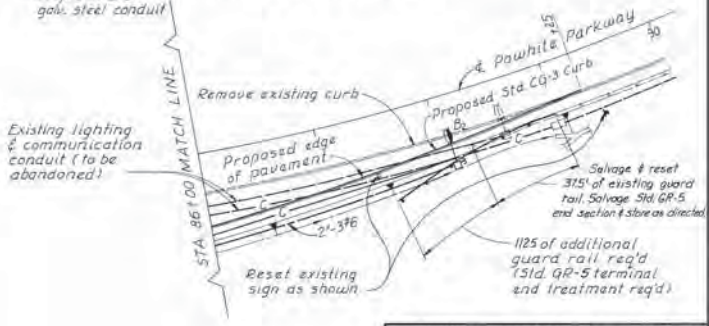
LEGEND:

- (A)- 1½" Bituminous Concrete Surface Course Type S-5.
- (B)-5½" Bituminous Concrete Base Course Type B-3.
- (D)-12" Aggregate Subbase Course, Size 21A. Prime Width of Pavement with 0.4 Gal./Sq. Yd. AE-2 or RC-250.
- (F)-Mountable Curb, CG-3.

CONSTRUCTION SEQUENCE:

1. Preparation for placement of concrete slab for Toll Plaza expansion to include all necessary conduit, installing or connecting subsurface drainage where required, removing existing caps to stairways to tunnel, etc.
2. Installing and extending necessary conduit for lighting & communication to include light pole foundations and junction boxes.
3. Island construction with emphasis on Lanes 9 & 10 for automatic coin collection to relieve peak traffic backup.
4. Continuation of grading and pavement construction to provide access to expanded toll facilities. Put into operation new lighting and communications.
5. Completion of toll plaza island and equipment.
6. Final completion of pavement and toll plaza construction, including guard rail, sign relocation, pavement striping, etc.





GENERAL NOTES:

1. It is the intent of this Plan:
   a. To show the limits of construction in respect to the existing Toll Plaza.
   b. To show either the addition, removal or relocation of existing utilities.
2. a. Electrical or communication conduit shall be extended or replaced in kind, unless otherwise directed by the Engineer.
   b. The letters along side of the proposed luminaires indicate phase connection and the numerical indicates circuit connection.
   c. All electrical wiring to be salvaged when possible and stored as directed by the Engineer.
3. Pavement striping shall be expanded to include expanded facility.
4. Rates of taper refer to offsets from centerline.

	BY	DATE				
MADE	R.B.P.	9-75				
CHECKED	C.C.J.	9-75	NO.	REVISION	BY	DATE
IN CHARGE	J.P.F.			Misc. Rev.	PHT	9-75

ESTIMATED QUANTITIES

ITEM	UNIT	TOTAL QUANTITIES	ITEM	UNIT	TOTAL QUANTITIES
REGULAR EXCAVATION	C.Y.	400	PAVED SHOULDER APRONS	EACH	2
SUBBASE COURSE, SIZE 21A	TON	6706	MULCH	BALES	120
BIT. CONC. BASE COURSE, TYPE B-3	TON	2231	LOWER AND CAP EXISTING DI-1	EACH	1
PRIME, RC-70 OR MC-70	GAL.	1276	ELECTRICAL,		
BIT. CONC. SURFACE COURSE, TYPE S-5	TON	695	2" CONDUIT P.V.C	L.F.	1568
CG-3	L.F.	1696	3" GALVANIZED STEEL CONDUIT	L.F.	120
REMOVAL, CG-3	L.F.	1740	#6 ELECTRICAL CONDUCTOR	L.F.	5970
REMOVE AND RELOCATE, STD. GR-2A OR GR-2B	L.F.	402	CONCRETE JUNCTION BOX	EACH	2
STD. GR-2A OR GR-2B	L.F.	213	RESET LIGHT POLES	EACH	12
TOPSOIL, CLASS B	C.Y.	217	COMMUNICATIONS, 2" METAL CONDUIT	L.F.	455
SEED	LB.	200	JUNCTION BOX	EACH	1
TACK COAT	GAL.	175	SIGNING, RESET SPEED SIGN	EACH	1

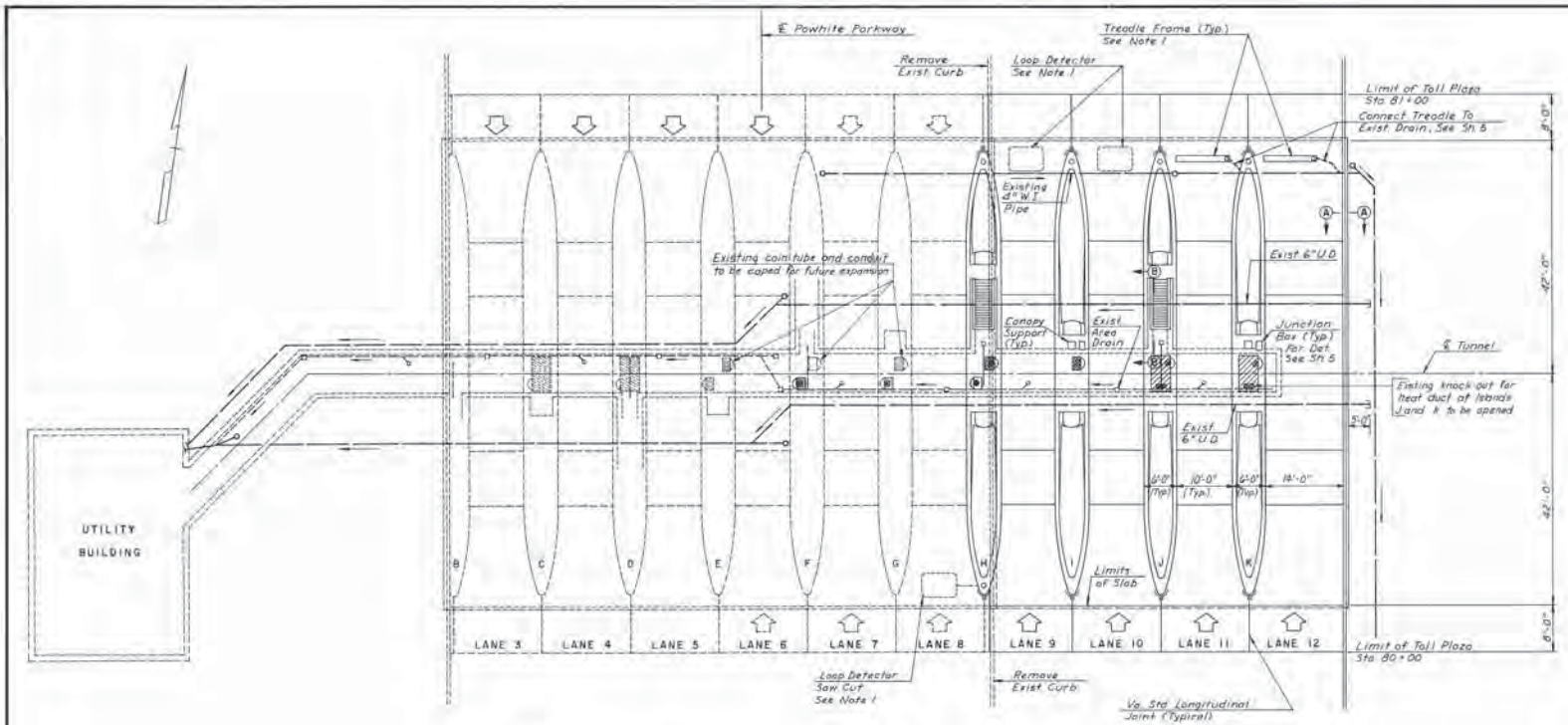
AS BUILT

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY

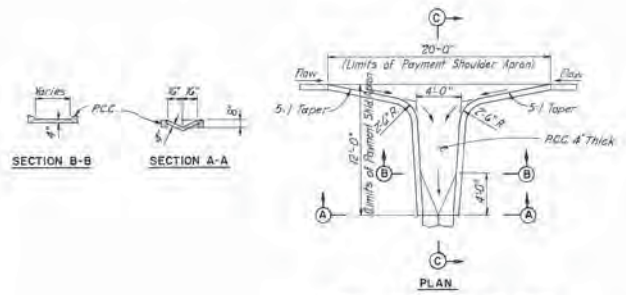
EXPANSION OF POWHITE TOLL PLAZA
GRADING, PAVEMENT AND UTILITY PLAN
STA. 72+00 TO STA. 89+25 E.B.L.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
Consulting Engineers
NEW YORK ALEXANDRIA KANSAS CITY

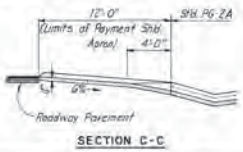
SCALE: 1"= 50'
CONTRACT NO.
SHEET NO. 1 OF 18



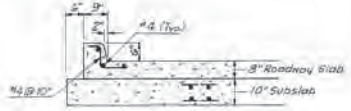
PLAN
Scale: 1/32"=1'-0"



SPECIAL DESIGN SHOULDER APRON



SECTION C-C



SECTION A-A
Scale: 1"=1'-0"

RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
TF-4	POWHITE PARKWAY	2	

SEQUENCE

- EXISTING EQUIPMENT TO REMAIN IN SERVICE.
- NEW COLLECTION EQUIPMENT TO BE INSTALLED ON ISLANDS H AND I AS THEY ARE COMPLETED.
- TOLL BOOTH AND EQUIPMENT TO SHIFT FROM ISLANDS F & G TO ISLANDS J & K IN SINGLE UNIT STAGES.
- EQUIPMENT TO BE SHIFTED FROM ISLAND E TO ISLAND F CAP CONDUIT ZONES ON ISLAND E TO ALLOW EASY FUTURE INSTALLATION OF UA MACHINE.
- NEXT LEVEL OF EXPANSION TO INCREASE PEAK NUMBER OF LANES TO FIVE EACH WAY.
- ULTIMATE LEVEL OF EXPANSION WOULD PROVIDE SIX LANES IN PEAK DIRECTION BY REVERSING LANES 7 AND 8.

NOTES:
1) To be placed by Toll Equipment Contractor prior to the paving, under this Contract.
2) Section B-B appears on sheet 4.

LEGEND:
- Location of future traffic signal.
- Traffic signal.
- Automatic Toll Machine.
- Future Automatic Toll Machine
- Toll Booth.
- Construct Coin Tube & Plug.
- Existing Coin Tubes knock-out to be opened
- Existing plugged coin tube for future expansion.

DESIGNED	T.E.M.	9-15-75				
DRAWN	T.E.M.	9-19-75				
CHECKED	P.H.T.	9-75	1	New Sheet	P.H.T.	9-75
IN CHARGE	J.R.F.		NO.	REVISION	BY	DATE

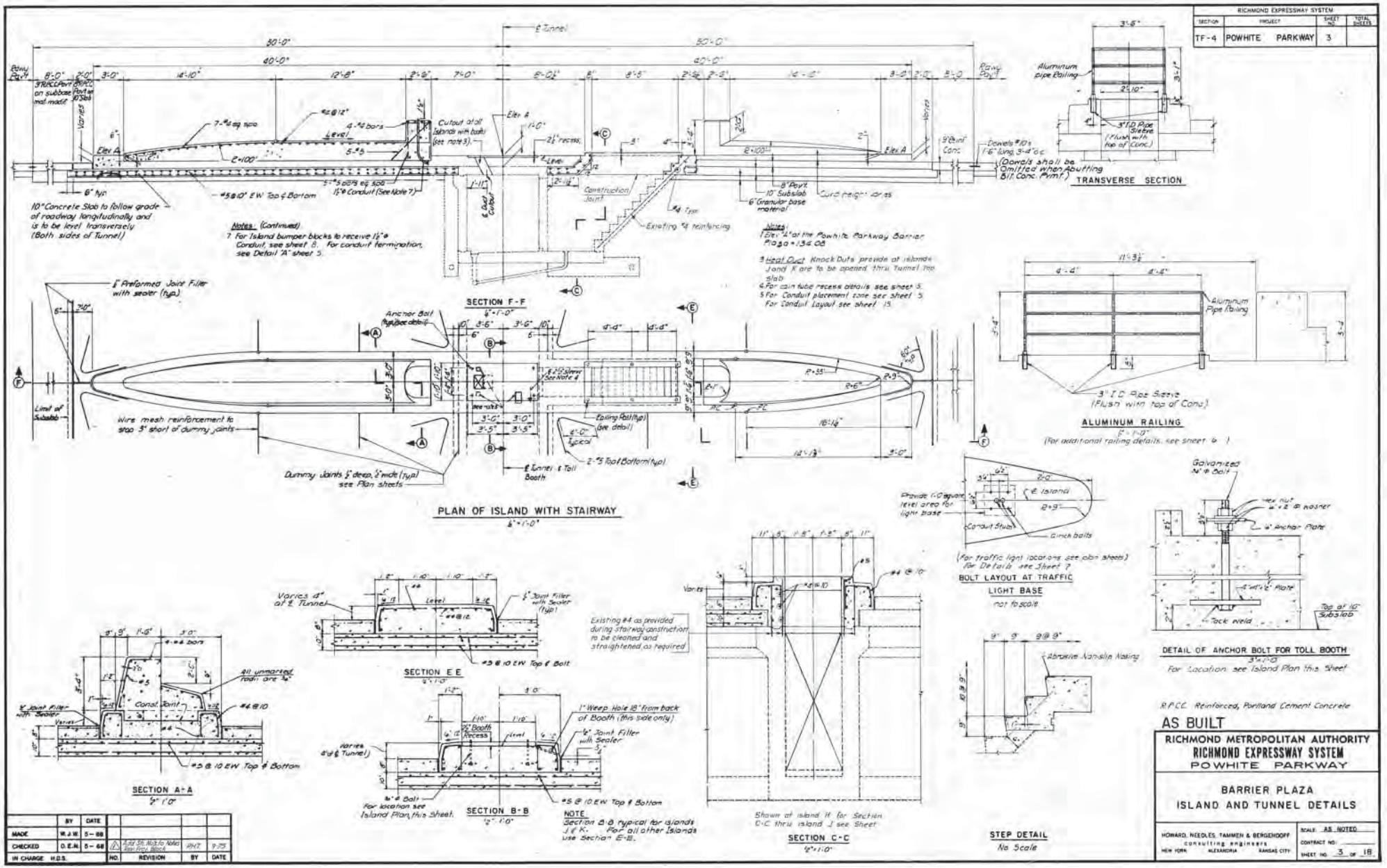
AS BUILT

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY

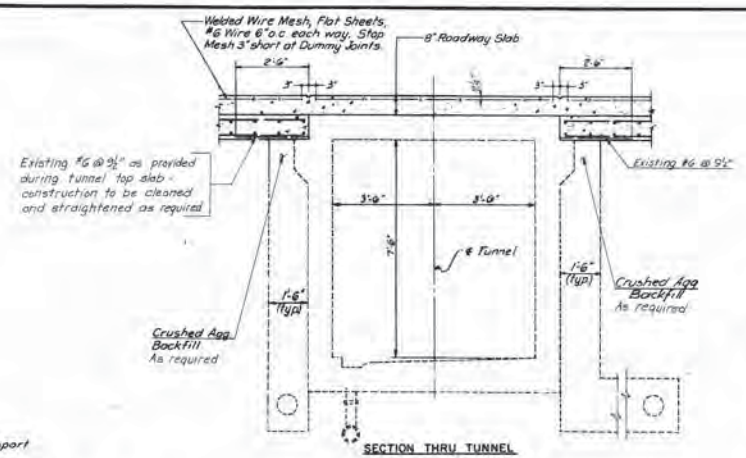
EXPANSION OF POWHITE TOLL PLAZA
TOLL PLAZA PLAN AND NOTES

SCALE: As noted
DATE: 9-75
SHEET 2 OF 18

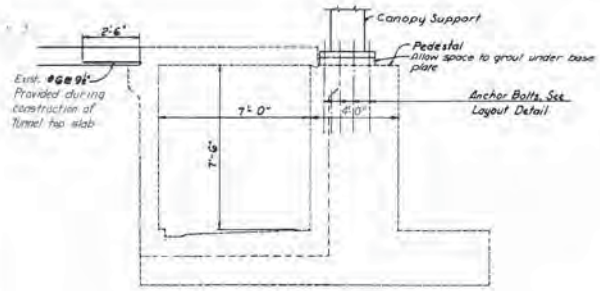
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
Alexandria, Virginia
HNTB


RICHMOND EXPRESSWAY SYSTEM
SECTION TF-4
PROJECT POWHITE PARKWAY
SHEET NO. 3
TOTAL SHEETS
TRANSVERSE SECTION
Aluminum pipe Railing
3" I.D. Pipe Sleeve (Flush with top of Conc.)
Dowels #10's 1'-6" long, 3'-4" o.c. (Dowels shall be Omitted when Abutting Bit. Conc. Pvmt.)
10" Concrete Slab to follow grade of roadway longitudinally and is to be level transversely (Both sides of Tunnel)
Notes: (Continued)
7. For Island bumper blocks to receive 1½" ø Conduit, see sheet 8. For conduit termination, see Detail "A" sheet 5.
Notes:
1 Elev. 'A' at the Powhite Parkway Barrier Plaza = 134.08
3 Heat Duct Knock Outs provide at islands J and K are to be opened thru Tunnel Top slab.
4 For coin tube recess details see sheet 5.
5 For Conduit placement zone see sheet 5. For Conduit Layout see sheet 15.
SECTION F-F
PLAN OF ISLAND WITH STAIRWAY
Wire mesh reinforcement to stop 3" short of dummy joints
Dummy Joints ½" deep, ⅛" wide (typ.) see Plan sheets
Limit of Subslab
½" Preformed Joint Filler with sealer (typ.)
Anchor Bolt typ. (See detail)
Railing Post (typ.) (See detail)
Toll Booth
ALUMINUM RAILING
(For additional railing details, see sheet 6)
Provide 1'-0 square level area for light base
Conduit Stubs
Crack bolts
(For traffic light locations see plan sheets)
For Details see Sheet 7
BOLT LAYOUT AT TRAFFIC LIGHT BASE
not to scale
Galvanized ¾" ø Bolt
Hex nut ¾" ø 2" ø washer
6" Anchor Plate
4"x4"x½" Plate
Tack Weld
Top of 10" Subslab
DETAIL OF ANCHOR BOLT FOR TOLL BOOTH
3"=1'-0"
For Location see Island Plan this Sheet
SECTION E-E
SECTION A-A
SECTION B-B
SECTION C-C
Varies 4" at ℄ Tunnel
Existing #4 as provided during stairway construction to be cleaned and straightened as required
Shown at island H for Section D-C thru island J see Sheet
1" Weep Hole 18" from back of Booth (this side only)
NOTE
Section B-B typical for islands J & K. For all other Islands use Section E-E.
STEP DETAIL
No Scale
R.P.C.C. Reinforced, Portland Cement Concrete
AS BUILT
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY
BARRIER PLAZA
ISLAND AND TUNNEL DETAILS
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY
SCALE: AS NOTED
CONTRACT NO:
SHEET NO. 3 OF 18
MADE W.J.W. 5-68
CHECKED D.E.N. 5-68
IN CHARGE H.D.S.
NO. REVISION BY DATE
1 Add Str. Nos. to Notes New Key Block PHT 9-75

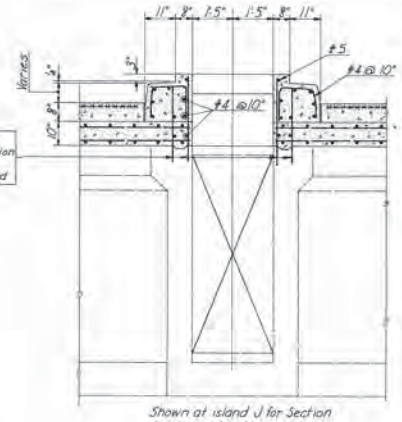
RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
TF-4	POWHITE PARKWAY	4	



SECTION THRU TUNNEL BETWEEN ISLANDS
½" = 1'-0"

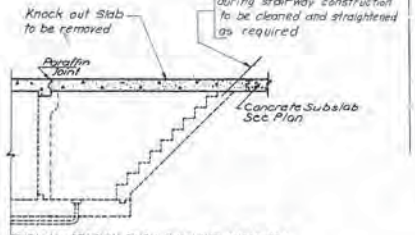


SECTION THRU TUNNEL AT CANOPY SUPPORT PEDESTAL

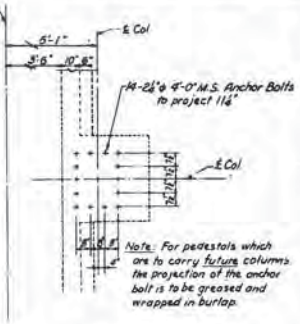


Shown at island J for Section C-C thru island H see Sheet

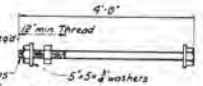
SECTION C-C
Scale: ½"=1'-0"



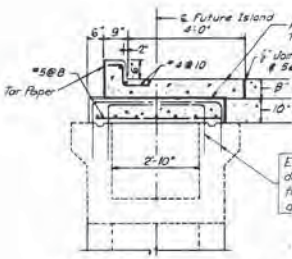
TYPICAL SECTION THRU EXISTING STAIRWAY
SECTION B-B
½" = 1'-0"



ANCHOR BOLT LAYOUT
BARRIER PLAZA CANOPY COLUMM
3/8" = 1'-0"



For Reference Only
COLUMN ANCHOR BOLT DETAIL
3/4" = 1'-0"



EXISTING SECTION AT PROPOSED ISLAND H
½" = 1'-0"

Notes
1) Top & Bot of Canopy footing will parallel slope of Tunnel floor.

AS BUILT

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY

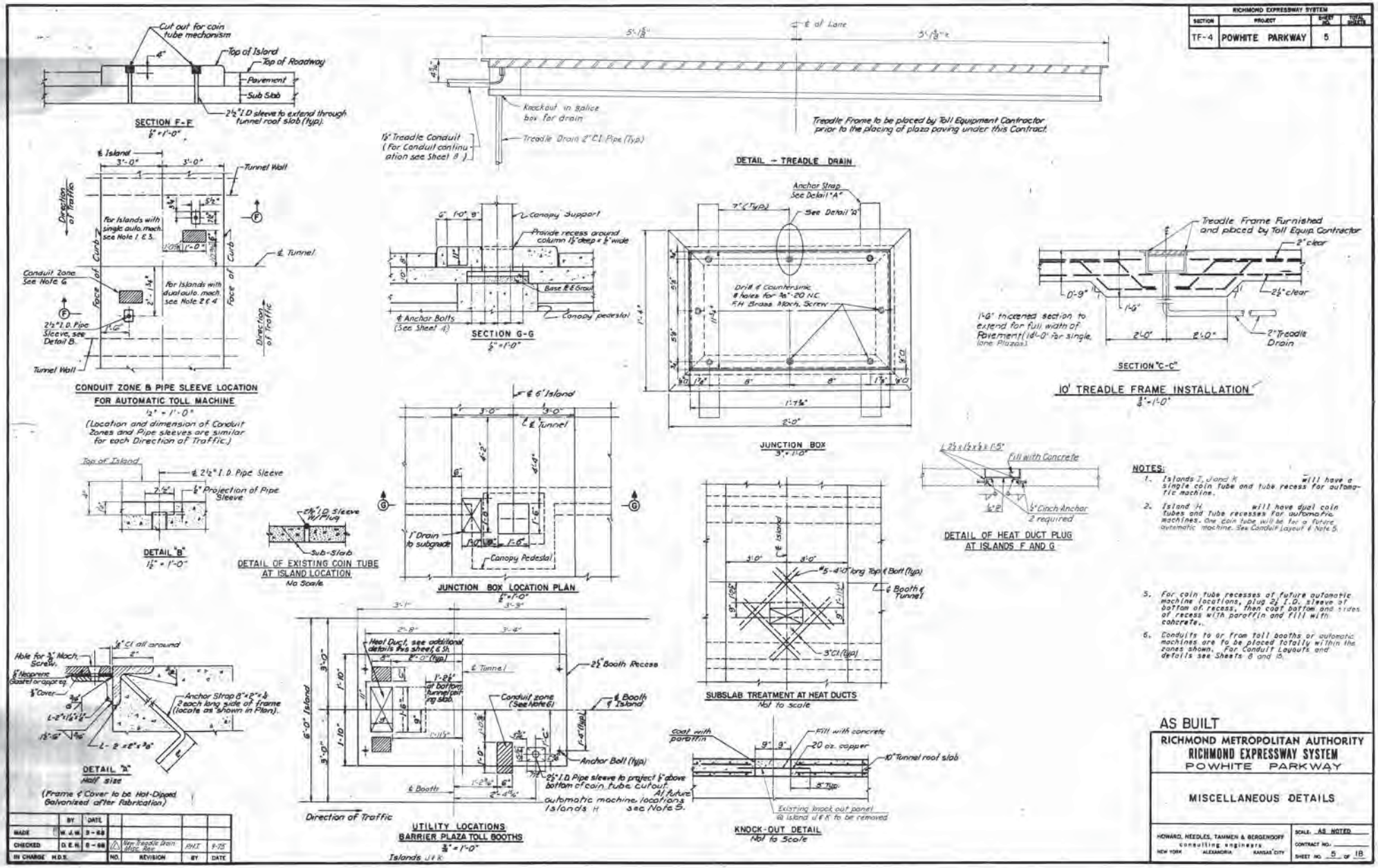
BARRIER PLAZA
TUNNEL DETAILS

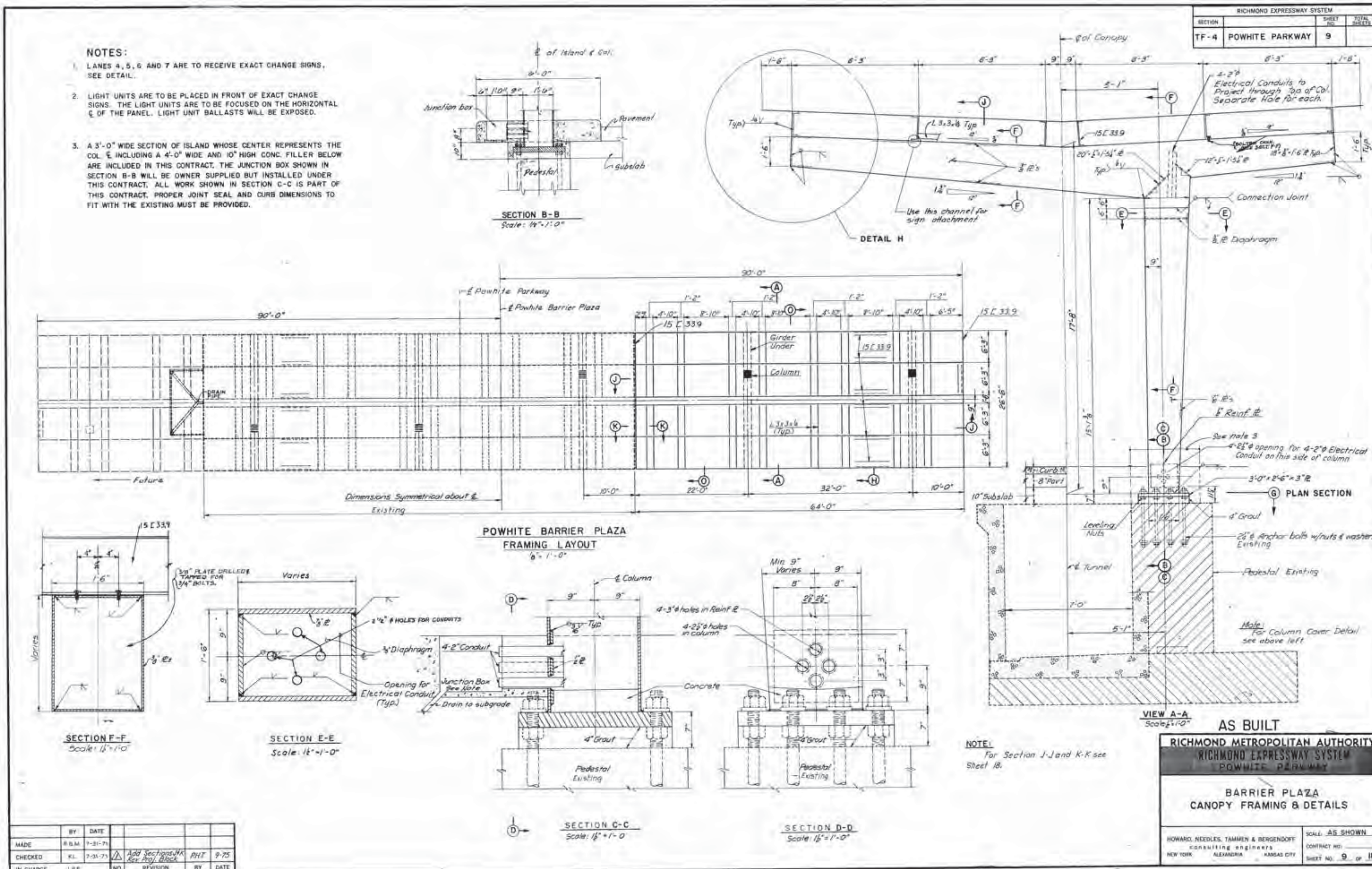
	BY	DATE
MADE	W.J.W.	5-68
CHECKED	D.E.N.	5-68
IN CHARGE	H.O.S.	

NO.	REVISION	BY	DATE
1	Rev. Sect. A-A, Revised Block	PMT	9-75

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY

SCALE: AS NOTED
CONTRACT NO.:
SHEET NO. 4 OF 18


RICHMOND EXPRESSWAY SYSTEM
SECTION TF-4 PROJECT POWHITE PARKWAY SHEET NO. 5
SECTION F-F
DETAIL - TREADLE DRAIN
CONDUIT ZONE & PIPE SLEEVE LOCATION FOR AUTOMATIC TOLL MACHINE
(Location and dimension of Conduit Zones and Pipe sleeves are similar for each Direction of Traffic.)
SECTION G-G
JUNCTION BOX
SECTION "C-C"
10' TREADLE FRAME INSTALLATION
DETAIL "B"
DETAIL OF EXISTING COIN TUBE AT ISLAND LOCATION
No Scale
JUNCTION BOX LOCATION PLAN
DETAIL OF HEAT DUCT PLUG AT ISLANDS F AND G
NOTES:
1. Islands I, J and K will have a single coin tube and tube recess for automatic machine.
2. Island H will have dual coin tubes and tube recesses for automatic machines. One coin tube will be for a future automatic machine. See Conduit Layout & Note 5.
5. For coin tube recesses at future automatic machine locations, plug 2½" I.D. sleeve at bottom of recess, then coat bottom and sides of recess with paraffin and fill with concrete.
6. Conduits to or from toll booths or automatic machines are to be placed totally within the zones shown. For Conduit Layouts and details see Sheets 8 and 15.
DETAIL "A"
Half size
(Frame & Cover to be Hot-Dipped Galvanized after Fabrication)
UTILITY LOCATIONS BARRIER PLAZA TOLL BOOTHS
Islands J & K
SUBSLAB TREATMENT AT HEAT DUCTS
Not to scale
KNOCK-OUT DETAIL
Not to Scale
AS BUILT
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY
MISCELLANEOUS DETAILS
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY
SCALE: AS NOTED
CONTRACT NO.:
SHEET NO. 5 OF 18



NOTES:

1. LANES 4, 5, 6 AND 7 ARE TO RECEIVE EXACT CHANGE SIGNS, SEE DETAIL.
2. LIGHT UNITS ARE TO BE PLACED IN FRONT OF EXACT CHANGE SIGNS. THE LIGHT UNITS ARE TO BE FOCUSED ON THE HORIZONTAL ℄ OF THE PANEL. LIGHT UNIT BALLASTS WILL BE EXPOSED.
3. A 3'-0" WIDE SECTION OF ISLAND WHOSE CENTER REPRESENTS THE COL. ℄ INCLUDING A 4'-0" WIDE AND 10" HIGH CONC. FILLER BELOW ARE INCLUDED IN THIS CONTRACT. THE JUNCTION BOX SHOWN IN SECTION B-B WILL BE OWNER SUPPLIED BUT INSTALLED UNDER THIS CONTRACT. ALL WORK SHOWN IN SECTION C-C IS PART OF THIS CONTRACT. PROPER JOINT SEAL AND CURB DIMENSIONS TO FIT WITH THE EXISTING MUST BE PROVIDED.

NOTE: For Section J-J and K-K see Sheet 18.

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY

BARRIER PLAZA
CANOPY FRAMING & DETAILS

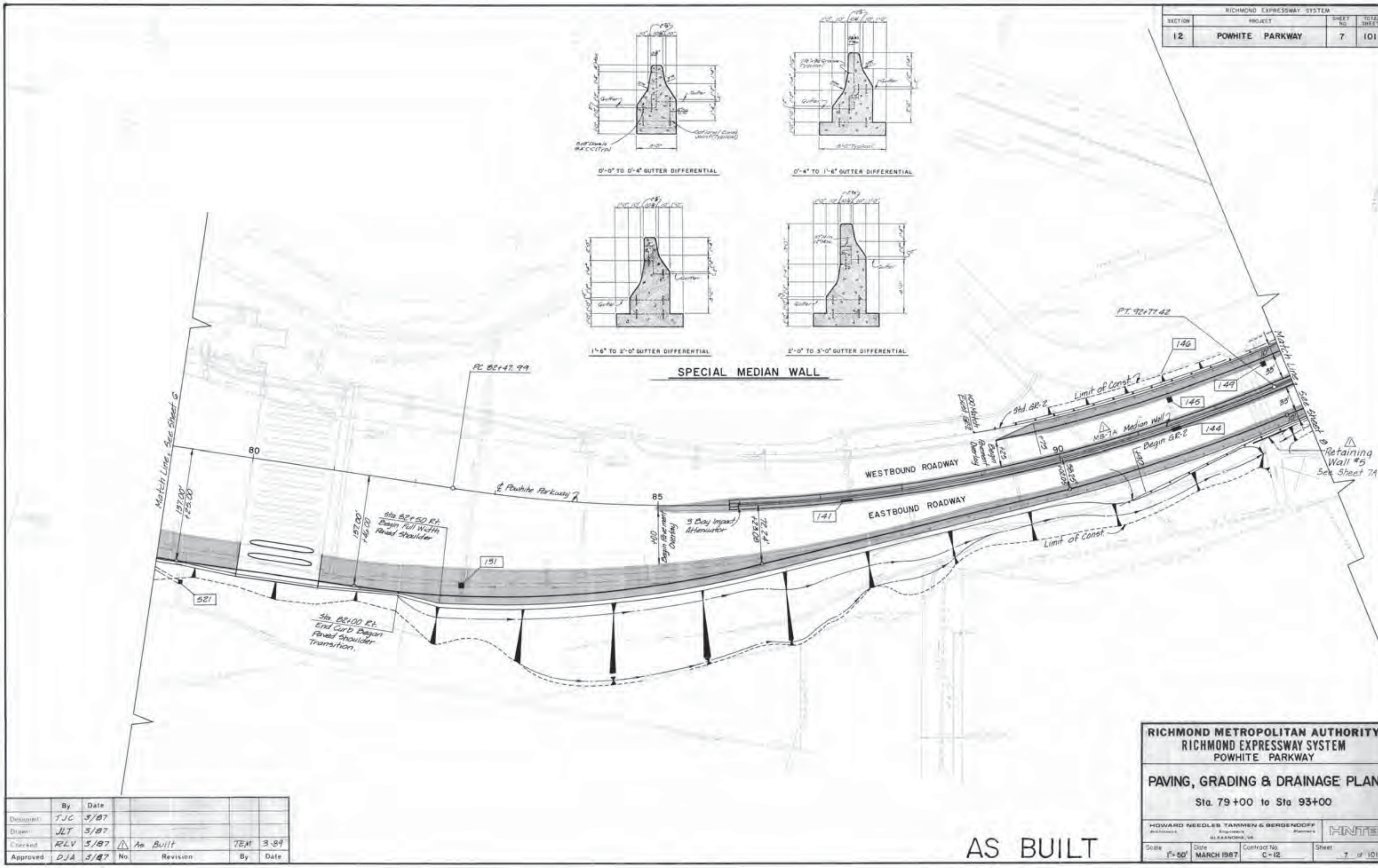
HOWARD, NEEDLES, TAMMEN & BERGENDOFF consulting engineers NEW YORK ALEXANDRIA KANSAS CITY

SCALE: AS SHOWN
CONTRACT NO.:
SHEET NO. 9 OF 18

	BY	DATE	NO.	REVISION	BY	DATE
MADE	R.S.M.	7-31-71				
CHECKED	K.L.	7-31-71	△	Add Sections J-J/K-K Rev. Proj. Block	PHT	9-75
IN CHARGE	J.P.P.					

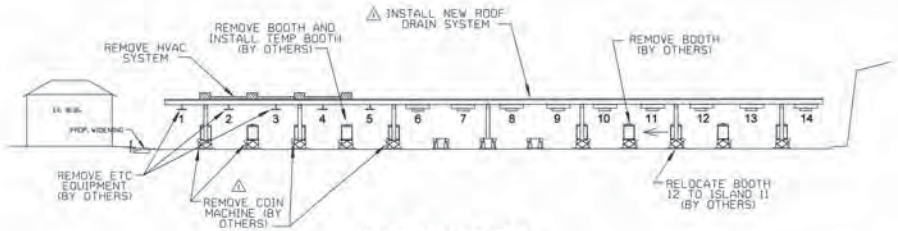
NORTHBOUND POWHITE PARKWAY TOLL PLAZA

1989 WIDENING

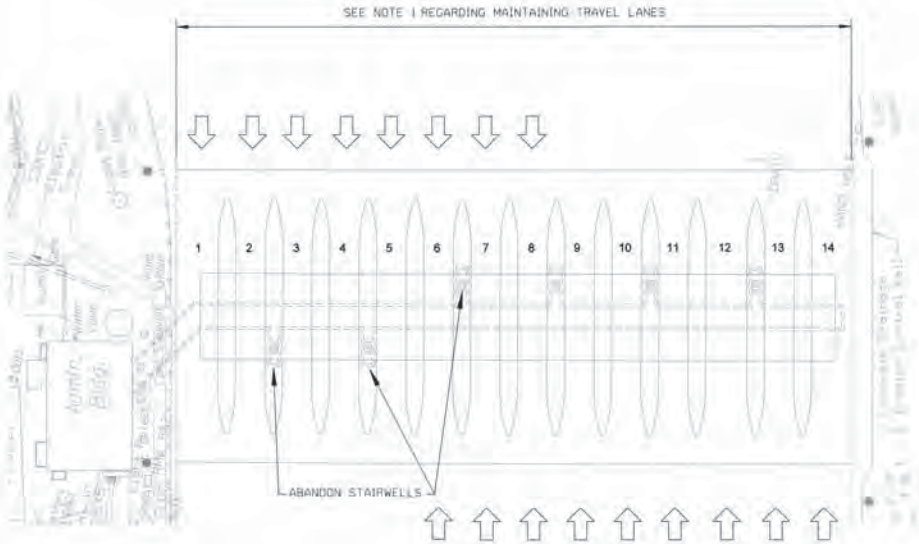

RICHMOND EXPRESSWAY SYSTEM
SECTION 12
PROJECT POWHITE PARKWAY
SHEET NO. 7
TOTAL SHEETS 101
0'-0" TO 0'-4" GUTTER DIFFERENTIAL
0'-4" TO 1'-6" GUTTER DIFFERENTIAL
1'-6" TO 2'-0" GUTTER DIFFERENTIAL
2'-0" TO 3'-0" GUTTER DIFFERENTIAL
SPECIAL MEDIAN WALL
PC 82+47.99
PT 92+77.42
Match Line, See Sheet 6
Match Line, See Sheet 8
80
85
90
℄ Powhite Parkway
WESTBOUND ROADWAY
EASTBOUND ROADWAY
Sta. 82+50 Rt. Begin Full Width Paved Shoulder
Sta. 82+00 Rt. End Curb Began Paved Shoulder Transition.
3 Bay Impact Attenuator
Begin Pavement Overlay
Limit of Const.
Std. GR-2
MB-7A Median Wall
Begin GR-2
Retaining Wall #5 See Sheet 7A
151
141
144
145
146
149
521
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY
PAVING, GRADING & DRAINAGE PLAN
Sta. 79+00 to Sta 93+00
HOWARD NEEDLES TAMMEN & BERGENDOFF
ALEXANDRIA, VA
HNTB
Scale 1"=50'
Date MARCH 1987
Contract No. C-12
Sheet 7 of 101
Designed TJC 3/87
Drawn JLT 3/87
Checked RLV 3/87
Approved DJA 3/87
1 As Built TEM 3-89
No. Revision By Date
AS BUILT

NORTHBOUND POWHITE PARKWAY TOLL PLAZA

2006 PLANS FOR DEMOLITION OF PORTION OF TOLL PLAZA



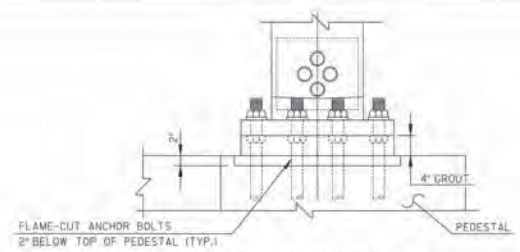
STAGE IIB ELEVATION



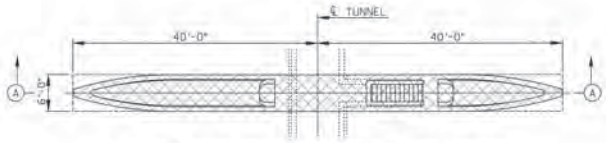
STAGE IIB PLAN

NOTES:

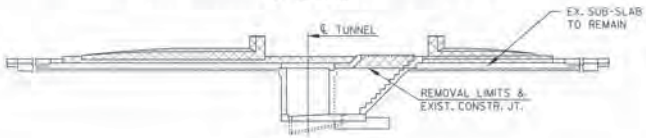
1. CONTRACTOR SHALL COORDINATE WITH ENGINEER WHO WILL PROVIDE SINGLE AND/OR LANE CLOSURES FOR PERIODS LESS THAN 24 HOURS, OR FOR WEEKENDS, TO CREATE WORK ZONE, AS DESCRIBED IN CONTRACT DOCUMENTS.
2. CONTRACTOR SHALL COORDINATE WITH ENGINEER TO ALLOW APPROPRIATE SCHEDULING OF TOLL PLAZA MODIFICATION WORK TO BE PERFORMED BY OTHERS.
3. NO WORK IMPACTING SB TRAVEL LANES SHALL BE ALLOWED BETWEEN 3:00 PM AND 7:00 PM, MONDAY THROUGH FRIDAY.
4. NO WORK IMPACTING NB TRAVEL LANES SHALL BE ALLOWED BETWEEN 6:00 AM AND 10:00 AM, MONDAY THROUGH FRIDAY.
5. FOR ADDITIONAL SEQUENCE NOTES, SEE MAINTENANCE OF TRAFFIC SHEET OF APPROPRIATE STAGE.
6. CONTRACTOR SHALL MAKE EVERY EFFORT TO SALVAGE EXISTING HVAC UNITS. SEE SPECIAL PROVISIONS.



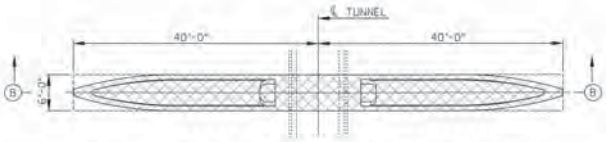
CANOPY SUPPORT REMOVAL
NOT TO SCALE



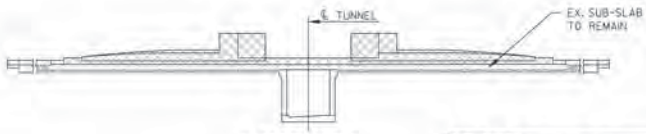
ISLAND DEMOLITION PLAN - ISLAND WITH STAIRS
NOT TO SCALE



SECTION A-A
NOT TO SCALE



ISLAND DEMOLITION PLAN - ISLAND WITHOUT STAIRS
NOT TO SCALE



SECTION B-B
NOT TO SCALE

REVISIONS
ADDENDUM NO. 2: 5/17/06
ADDENDUM NO. 1: 5/10/06

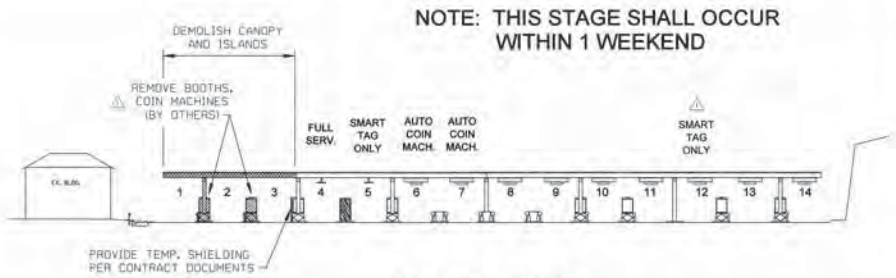
HNTB
9175 GUILFORD ROAD, SUITE 100
COLUMBIA, MARYLAND 21046
(301) 543-1000

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

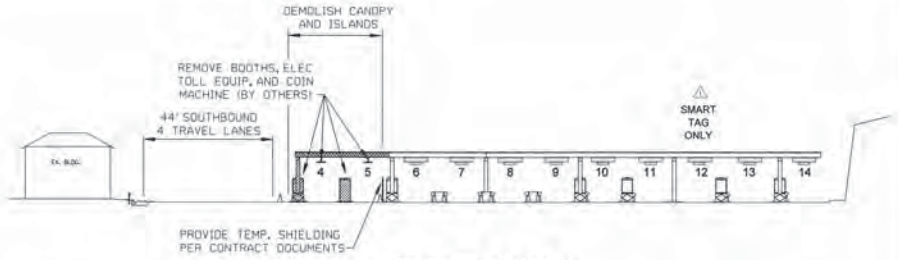
POWHITE PARKWAY EXPRESS
TOLL LANES PROJECT
EX. TOLL PLAZA MODIFICATIONS
STAGE IIB

Scale:	Date:	Contract No.:	Sheet:
1" = 20'	07/20/06	PEL-2006	30 of 161

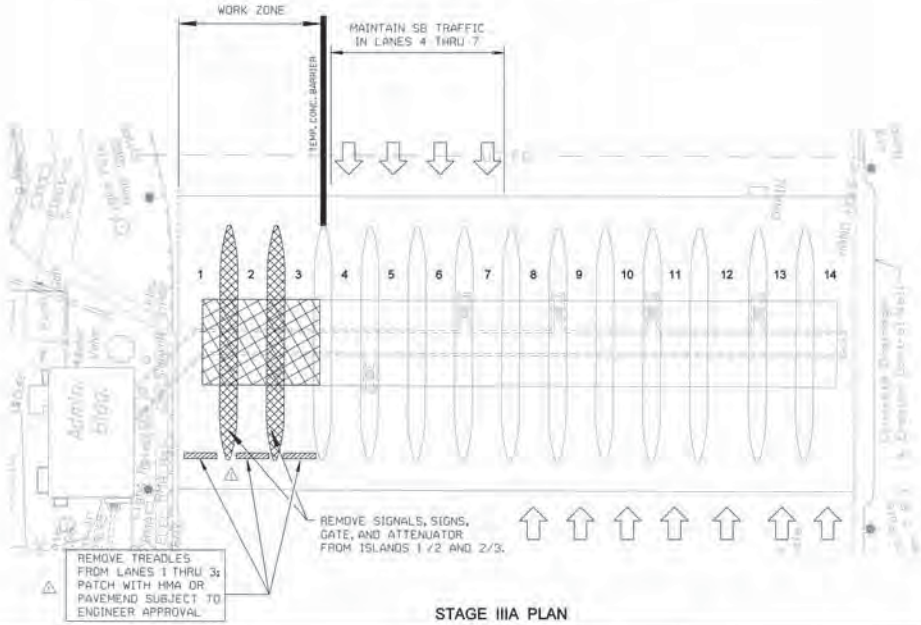
NOTE: THIS STAGE SHALL OCCUR WITHIN 1 WEEKEND



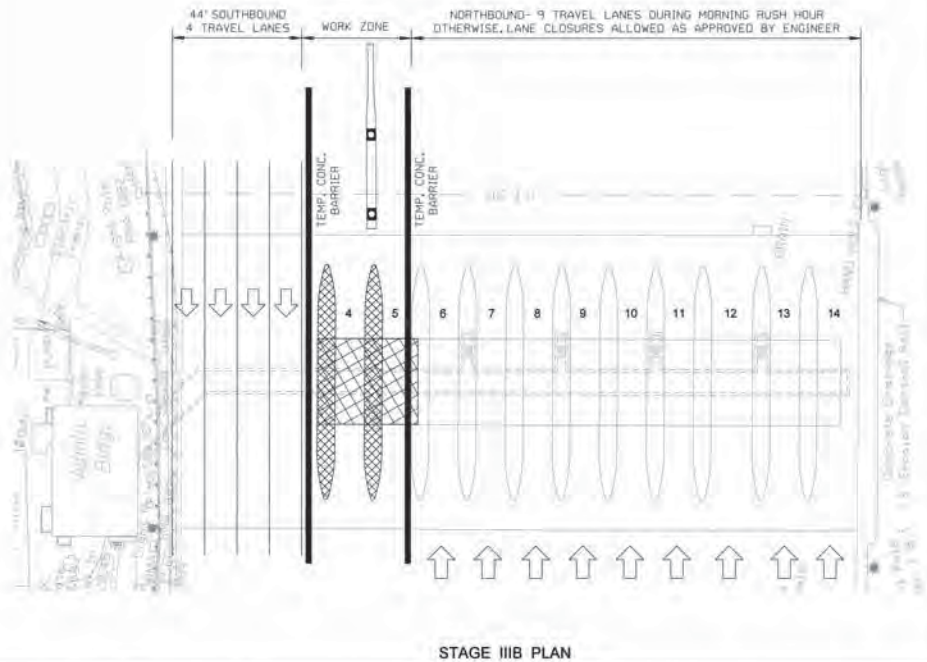
STAGE IIIA ELEVATION



STAGE IIIB ELEVATION



STAGE IIIA PLAN



STAGE IIIB PLAN

NOTES:

1. CONTRACTOR SHALL COORDINATE WITH ENGINEER WHO WILL PROVIDE SINGLE AND/OR MULTIPLE LANE CLOSURES FOR PERIODS LESS THAN 24 HOURS, OR FOR WEEKENDS, TO CREATE WORK ZONE, AS DESCRIBED IN CONTRACT DOCUMENTS.
2. CONTRACTOR SHALL COORDINATE WITH ENGINEER TO ALLOW APPROPRIATE SCHEDULING OF TOLL PLAZA MODIFICATION WORK TO BE PERFORMED BY OTHERS.
3. NO WORK IMPACTING SB TRAVEL LANES SHALL BE ALLOWED BETWEEN 3:00 PM AND 7:00 PM, MONDAY THROUGH FRIDAY.
4. NO WORK IMPACTING NB TRAVEL LANES SHALL BE ALLOWED BETWEEN 6:00 AM AND 10:00 AM, MONDAY THROUGH FRIDAY.
5. FOR ADDITIONAL SEQUENCE NOTES, SEE MAINTENANCE OF TRAFFIC SHEET OF APPROPRIATE STAGE.

REVISIONS
ADDENDUM NO. 1: 5/10/06

HNTB
9175 GUILFORD ROAD, SUITE 100
COLUMBIA, MARYLAND 21046
(301) 543-1000

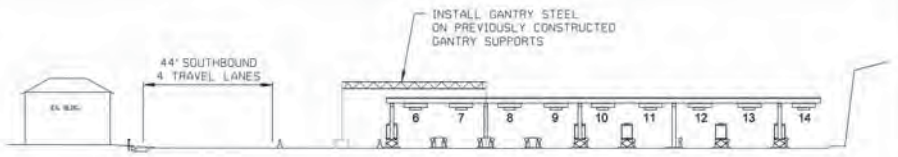
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

POWHITE PARKWAY EXPRESS TOLL LANES PROJECT

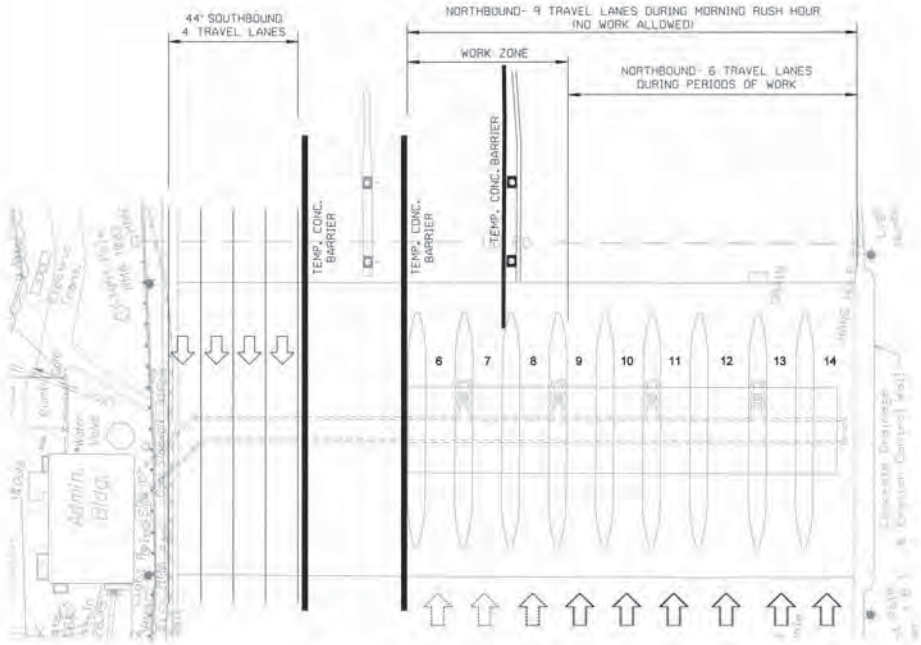
EX. TOLL PLAZA MODIFICATIONS STAGES IIIA & IIIB

Scale	Date	Contract No.	Sheet
1" = 20'	07/20/06	PEL-2006	31 of 161

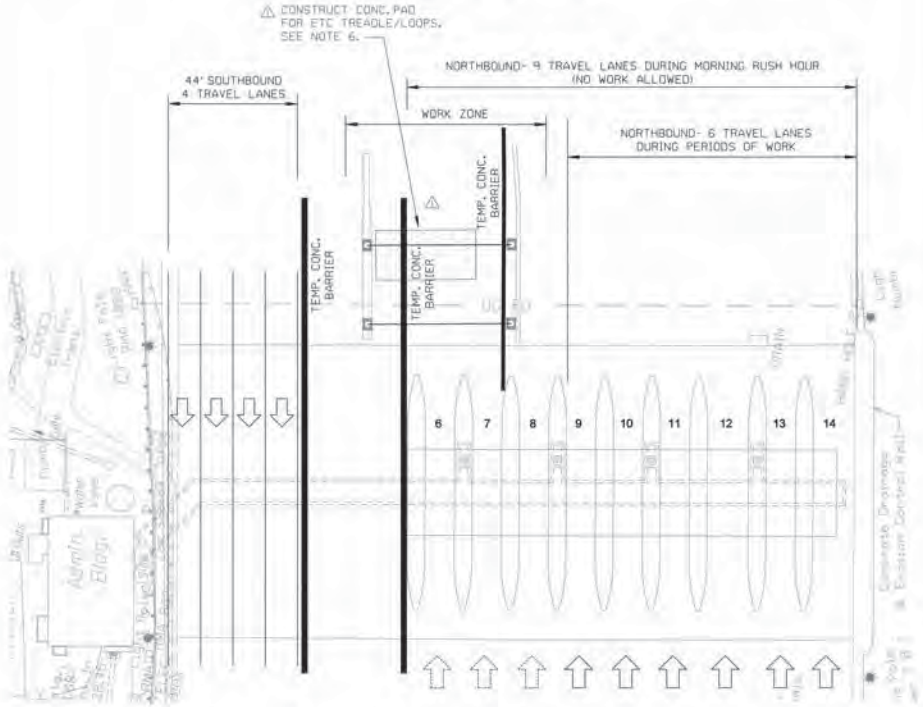
STAGE IIIC ELEVATION



STAGE IIID ELEVATION



STAGE IIIC PLAN



STAGE IIID PLAN

NOTES:

1. CONTRACTOR SHALL COORDINATE WITH ENGINEER WHO WILL PROVIDE SINGLE AND/OR MULTIPLE LANE CLOSURES FOR PERIODS LESS THAN 24 HOURS, OR FOR WEEKENDS, TO CREATE WORK ZONE, AS DESCRIBED IN CONTRACT DOCUMENTS.
2. CONTRACTOR SHALL COORDINATE WITH ENGINEER TO ALLOW APPROPRIATE SCHEDULING OF TOLL PLAZA MODIFICATION WORK TO BE PERFORMED BY OTHERS.
3. NO WORK IMPACTING SB TRAVEL LANES SHALL BE ALLOWED BETWEEN 3:00 PM AND 7:00 PM, MONDAY THROUGH FRIDAY.
4. NO WORK IMPACTING NB TRAVEL LANES SHALL BE ALLOWED BETWEEN 6:00 AM AND 10:00 AM, MONDAY THROUGH FRIDAY.
5. FOR ADDITIONAL SEQUENCE NOTES, SEE MAINTENANCE OF TRAFFIC SHEET OF APPROPRIATE STAGE.
6. CONC. PAD FOR TREADLE SHALL BE CONSTRUCTED OVER A ONE WEEKEND PERIOD, BETWEEN FRI. 10:00 A.M. AND MON. 6:00 A.M. HIGH-EARLY STRENGTH CONCRETE SHALL BE USED.

ADDENDUM NO. 1: 5/10/06
REVISIONS

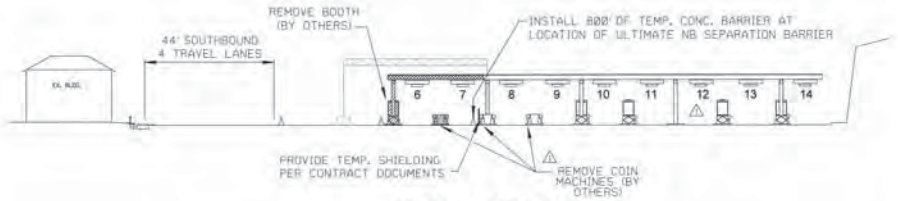
HNTB
9175 GUILFORD ROAD, SUITE 100
COLUMBIA, MARYLAND 21046
(301) 543-1000

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

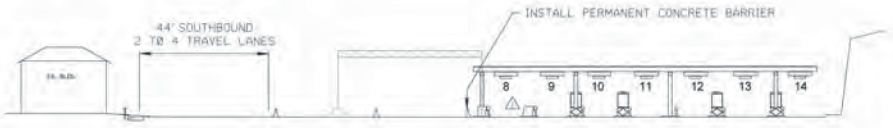
POWHITE PARKWAY EXPRESS
TOLL LANES PROJECT
EX. TOLL PLAZA MODIFICATIONS
STAGES IIIC & IIID

Scale	Date	Contract No.	Sheet
1" = 20'	07/20/06	PEL-2006	32 of 161

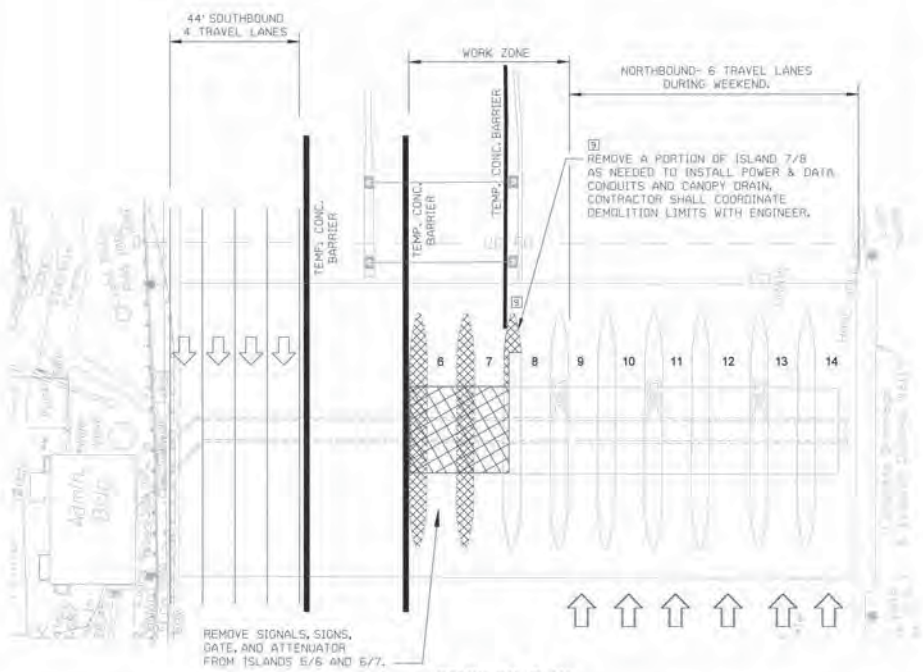
STAGES IVA AND IVB SHALL OCCUR WITHIN 1 WEEKEND.



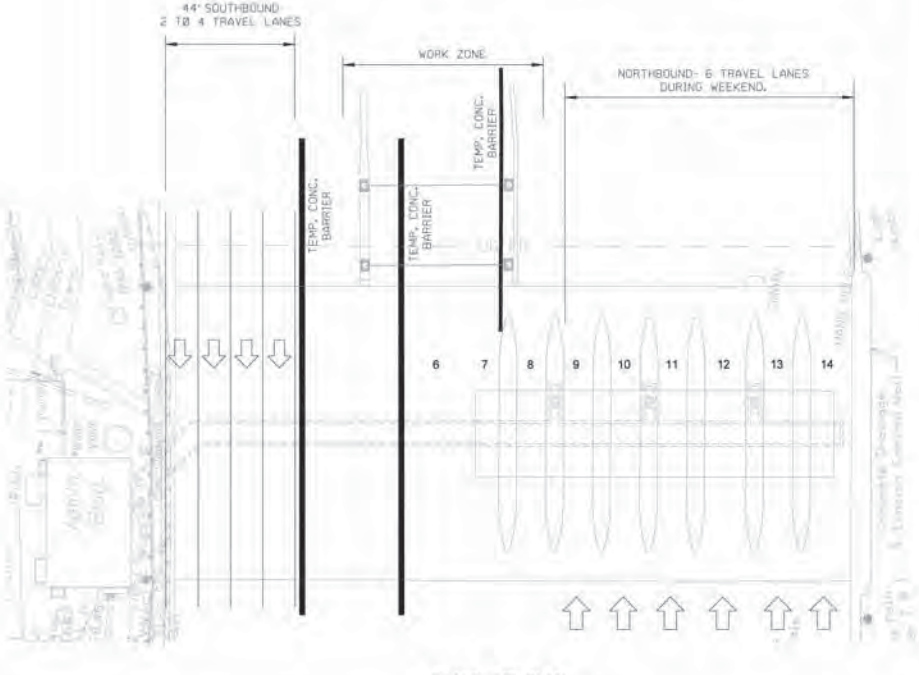
STAGE IVA ELEVATION



STAGE IVB ELEVATION



STAGE IVA PLAN



STAGE IVB PLAN

NOTES:

⚠ 1. CONTRACTOR SHALL COORDINATE WITH ENGINEER WHO WILL PROVIDE SINGLE AND/OR MULTIPLE LANE CLOSURES FOR PERIODS LESS THAN 24 HOURS, OR FOR WEEKENDS, TO CREATE WORK ZONE, AS DESCRIBED IN CONTRACT DOCUMENTS.

2. CONTRACTOR SHALL COORDINATE WITH ENGINEER TO ALLOW APPROPRIATE SCHEDULING OF TOLL PLAZA MODIFICATION WORK TO BE PERFORMED BY OTHERS.

3. NO WORK IMPACTING SB TRAVEL LANES SHALL BE ALLOWED BETWEEN 3:ØØ PM AND 7:ØØ PM, MONDAY THROUGH FRIDAY.

4. NO WORK IMPACTING NB TRAVEL LANES SHALL BE ALLOWED BETWEEN 6:ØØ AM AND 10:ØØ AM, MONDAY THROUGH FRIDAY.

5. FOR ADDITIONAL SEQUENCE NOTES, SEE MAINTENANCE OF TRAFFIC SHEET OF APPROPRIATE STAGE.

REVISIONS
5 3/5/08: REVISED SHEET - SEE SHEET 1C
⚠ ADDENDUM NO. 1: 5/10/06

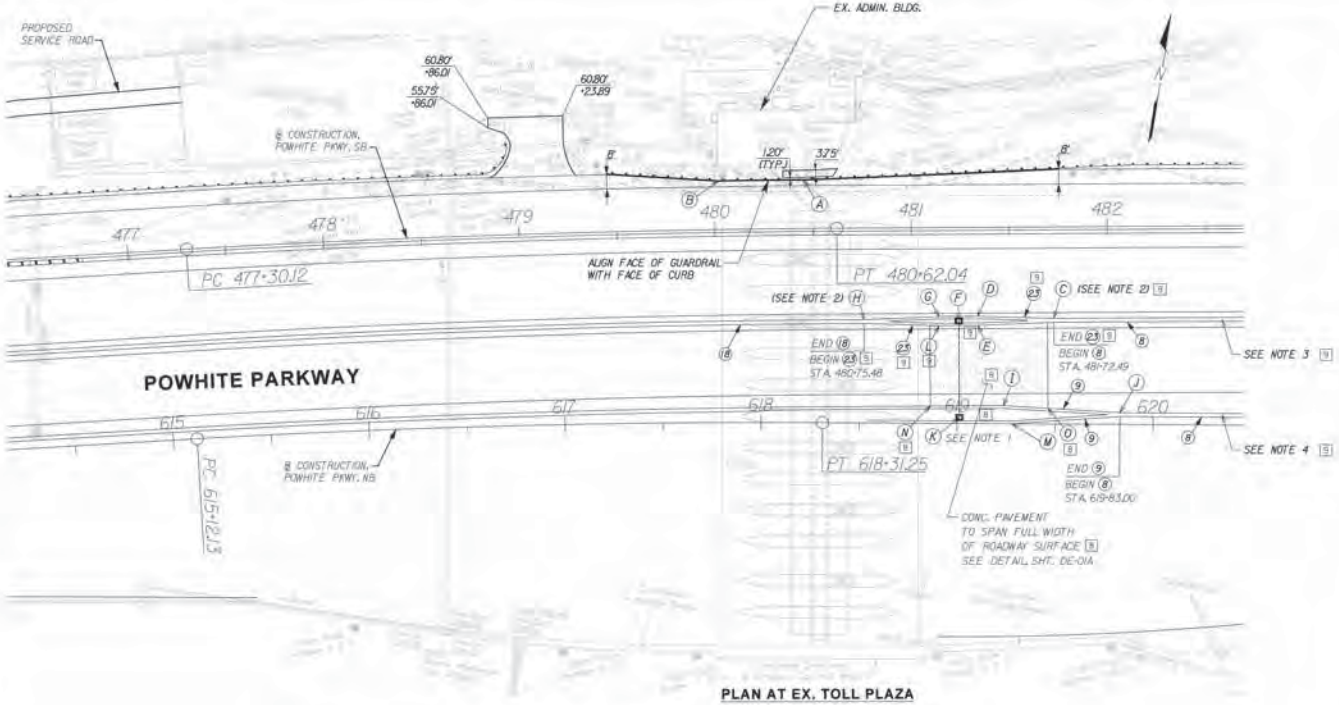
HNTB
9175 GUILFORD ROAD, SUITE 300
COLUMBIA, MARYLAND 21046
(301) 543-1000

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

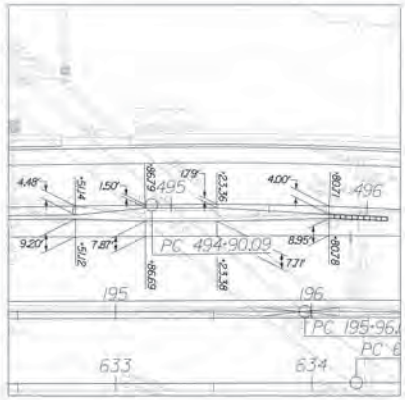
POWHITE PARKWAY EXPRESS
TOLL LANES PROJECT

EX. TOLL PLAZA MODIFICATIONS
STAGES IVA & IVB

Scale:	Date:	Contract No.:	Sheets:
1" = 20'	3/06/08	PEL-2006	33 of 161



PLAN AT EX. TOLL PLAZA



BARRIER TRANSITION PLAN AT POWHITE PARKWAY SB RAILROAD BRIDGE PIER

HORIZONTAL CONTROL POINT SCHEDULE

POINT NO.	LOCATION	DESCRIPTION	
(A)	STA. 480+45.49, 25.00' LT., POWHITE PKWY. SB	FACE OF CURB	
(B)	STA. 480+01.69, 25.00' LT., POWHITE PKWY. SB	FACE OF CURB	
(C)	STA. 481+72.49, 47.02' RT., POWHITE PKWY. SB	END BARRIER HORIZONTAL TRANSITION; END 50" BARRIER HEIGHT	
(D)	STA. 481+33.63, 45.67' RT., POWHITE PKWY. SB	BEGIN BARRIER TRANSITION	5
(E)	STA. 481+33.63, 50.33' RT., POWHITE PKWY. SB	BEGIN BARRIER TRANSITION	8 5
(F)	STA. 481+23.98, 48.00' RT., POWHITE PKWY. SB	CENTER GANTRY FOUNDATION TY. 2A	8 5
(G)	STA. 481+13.96, 45.67' RT., POWHITE PKWY. SB	END BARRIER TRANSITION	5
(H)	STA. 480+75.48, 47.02' RT., POWHITE PKWY. SB	BEGIN BARRIER HORIZONTAL TRANSITION; BEGIN 50" BARRIER HEIGHT	
(I)	STA. 619+23.59, 9.33' LT., POWHITE PKWY. NB	BEGIN BARRIER TRANSITION	
(J)	STA. 619+83.00, 5.97' LT., POWHITE PKWY. NB	END BARRIER TRANSITION	
(K)	STA. 619+1.21, 2.95' LT., POWHITE PKWY. NB	CENTER GANTRY FOUNDATION TY. 2B	5
(L)	STA. 481+13.96, 50.33' RT., POWHITE PKWY. SB	END BARRIER TRANSITION	8 5
(M)	STA. 619+27.81, 0.00', POWHITE PKWY. NB	BEGIN BARRIER TRANSITION	
(N)	STA. 618+86.36, POWHITE PKWY. NB	LIMIT OF 9" CONC. PAVEMENT	8 10
(O)	STA. 619+46.36, POWHITE PKWY. NB	LIMIT OF 9" CONC. PAVEMENT	8 10

NOTES:

1. SEE SHEETS SM-4D AND SM-4I FOR GANTRY FOUNDATION DETAILS.
2. TRANSITION FROM THE 32" BARRIER HEIGHT TO A 50" BARRIER HEIGHT OVER A DISTANCE OF 6 FEET. SEE THE VDOT STANDARDS PAGE 501.55 FOR ADDITIONAL BARRIER TRANSITION DETAILS.
3. 2- 1" CONDUITS TO BE INSTALLED IN CONCRETE MEDIAN BARRIER FROM GANTRY LOCATION TO DMAS POLE AT APPROXIMATE STA. 184+12. SEE SHEET L-0F FOR MORE DETAILS.
4. 2- 1" CONDUITS TO BE INSTALLED IN CONCRETE MEDIAN BARRIER FROM GANTRY LOCATION TO DMAS CAMERA MOUNTED ON LIGHT POLE LP-15. SEE SHEET L-0F FOR MORE DETAILS.

LEGEND

(8) Modified MB-7D, Concrete Median Barrier
(9) Modified MB-7E, Concrete Median Barrier
(18) Modified MB-8A, Type I Conc. Med. Barrier, See Sht. DE-02
5 (23) Std MB-12B, Conc. Med. Barrier

10	4/10/08: REVISED SHEET - SEE SHEET 1C
9	3/5/08: REVISED SHEET - SEE SHEET 1C
8	10/05/07: REVISED GANTRY AREA - SEE SHEET 1C
2	7/20/06: ADDED SHEET

REVISIONS

DE-06 OF 06

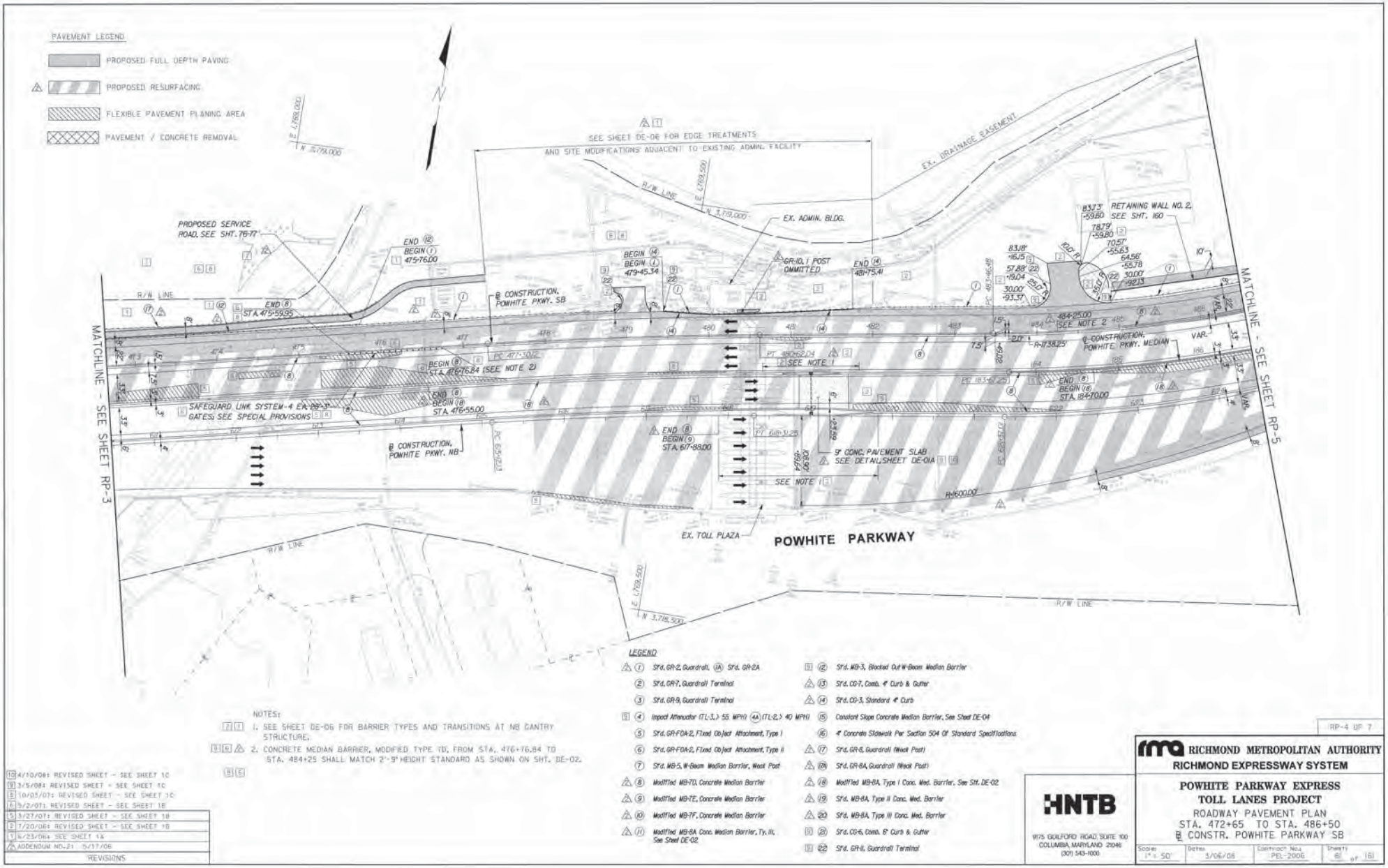
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

POWHITE PARKWAY EXPRESS TOLL LANES PROJECT

MISCELLANEOUS DETAILS

HNTB
9975 GUILFORD ROAD, SUITE 100
COLUMBIA, MARYLAND 21046
(301) 543-1000

Scale:	Date:	Contract No.:	Sheet:
1" = 30'	3/06/08	PEL-2006	47 of 161



NOTES:

1. SEE SHEET DE-06 FOR BARRIER TYPES AND TRANSITIONS AT NB GANTRY STRUCTURE.
2. CONCRETE MEDIAN BARRIER, MODIFIED TYPE TD, FROM STA. 476+76.84 TO STA. 484+25 SHALL MATCH 2'-9" HEIGHT STANDARD AS SHOWN ON SHT. DE-02.

LEGEND

1. Std. GR-2, Guardrail, (A) Std. GR-2A
2. Std. GR-7, Guardrail Terminal
3. Std. GR-9, Guardrail Terminal
4. Impact Attenuator (TL-3,) 55 MPH) (4A) (TL-2,) 40 MPH)
5. Std. GR-FOA-2, Fixed Object Attachment, Type I
6. Std. GR-FOA-2, Fixed Object Attachment, Type II
7. Std. MB-5, W-Beam Median Barrier, Weak Post
8. Modified MB-7D, Concrete Median Barrier
9. Modified MB-7E, Concrete Median Barrier
10. Modified MB-7F, Concrete Median Barrier
11. Modified MB-8A Conc. Median Barrier, Ty. III, See Sheet DE-02
12. Std. MB-3, Blocked Out W-Beam Median Barrier
13. Std. CD-7, Comb. 4" Curb & Gutter
14. Std. CD-3, Standard 4" Curb
15. Constant Slope Concrete Median Barrier, See Sheet DE-04
16. 4' Concrete Sidewalk Per Section 504 Of Standard Specifications
17. Std. GR-6, Guardrail (Weak Post)
18. Std. GR-8A, Guardrail (Weak Post)
18. Modified MB-8A, Type I Conc. Med. Barrier, See Sht. DE-02
19. Std. MB-8A, Type II Conc. Med. Barrier
20. Std. MB-8A, Type III Conc. Med. Barrier
21. Std. CG-6, Comb. 8" Curb & Gutter
22. Std. GR-6, Guardrail Terminal

REVISIONS

10 4/10/08: REVISED SHEET - SEE SHEET 1C
9 3/5/08: REVISED SHEET - SEE SHEET 1C
8 10/05/07: REVISED SHEET - SEE SHEET 1C
6 9/2/07: REVISED SHEET - SEE SHEET 1B
5 3/27/07: REVISED SHEET - SEE SHEET 1B
2 7/20/06: REVISED SHEET - SEE SHEET 1B
1 6/23/06: SEE SHEET 1A
ADDENDUM NO. 2: 5/17/06

HNTB
9175 GUILFORD ROAD, SUITE 100
COLUMBIA, MARYLAND 21046
(301) 543-1000

RP-4 OF 7

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

POWHITE PARKWAY EXPRESS TOLL LANES PROJECT

ROADWAY PAVEMENT PLAN
STA. 472+65 TO STA. 486+50
℄ CONSTR. POWHITE PARKWAY SB

Scale	Date	Contract No.	Sheet
1" = 50'	3/06/08	PEL-2006	6 of 161

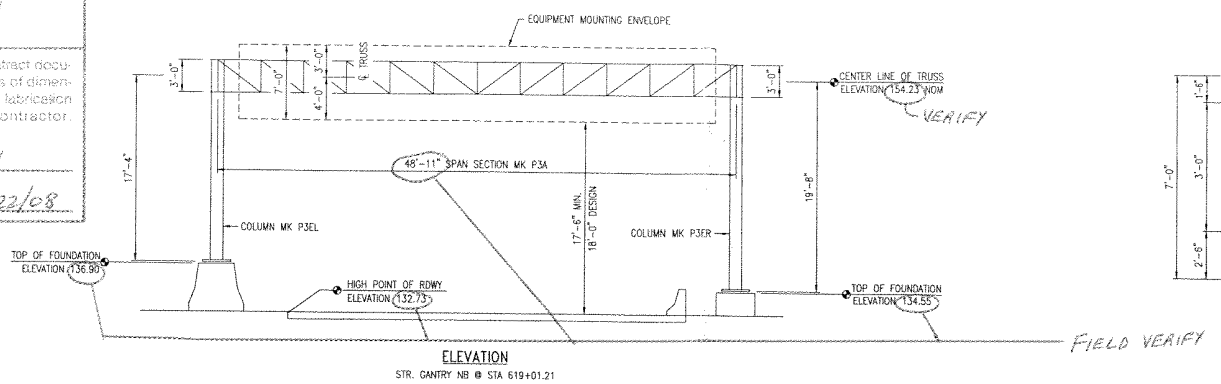
POWHITE PARKWAY TOLL PLAZA

TOLL GANTRY SHOP DRAWINGS

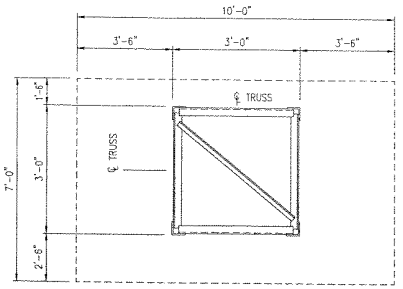
SHOP DRAWING REVIEW
HNTB Corporation

Review is for general compliance with contract documents. Sole responsibility for correctness of dimensions, details, quantities and safety during fabrication and erection shall remain with the Contractor.

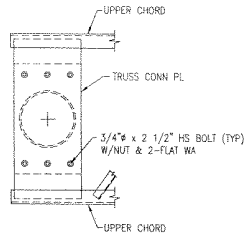
☐ No Exceptions Taken
☒ Make Correction Noted By AN
☐ Amend and Resubmit
☐ Rejected – See Remarks Date 3/22/08



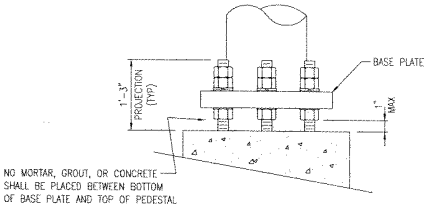
ELEVATION
STR. GANTRY NB @ STA 619+01.21



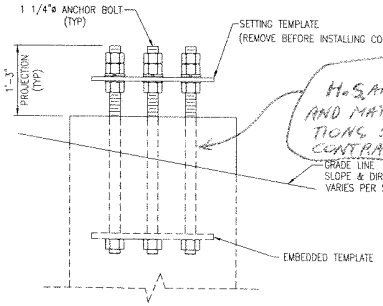
TYPICAL SECTION
EQUIPMENT MOUNTING ENVELOPE



UPPER CONNECTION DETAIL
(LEFT COLUMN SHOWN. RIGHT COLUMN SIMILAR)



BASE PLATE ERECTION



TYPICAL FOUNDATION ELEVATION

M 5 ANCHOR BOLT AND MATERIAL SPECIFICATIONS SHALL COMPLY WITH CONTRACT DRAWING SM-40 OF 41

GENERAL NOTES:

STRUCTURE DESIGN PER AASHTO STANDARD SPECS. FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRS AND TRAFFIC SIGNALS, 1994 EDITION.

DESIGN WIND SPEED 80 MPH.

ALL WELDING PER AWS D1.1 (LATEST EDITION).

STRUCTURE DESIGN BY HURTT FABRICATING CORP.

ANCHOR BOLT & FOUNDATION DESIGN BY HNTB.

EQUIPMENT MOUNTING BRACKETS & HARDWARE BY OTHERS.

FOUNDATION & ROADWAY ELEVATIONS PROVIDED BY VENTURE ELECTRIC CO. ON 2-5-08.

FIELD VERIFY — THE ELEVATIONS SHOWN ARE FOR REFRENCE AND RELATIONSHIP ONLY AND ARE NOT THE ACTUAL SITE ELEVATIONS.

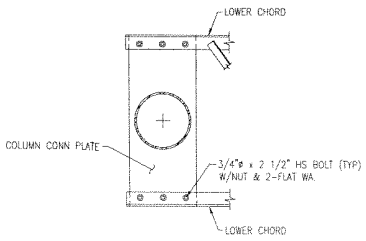
17'-6" MINIMUM (18'-0" DESIGN) CLEARANCE FROM THE HIGH POINT OF THE ROADWAY TO THE BOTTOM OF THE EQUIPMENT MOUNTING ENVELOPE.

THE TRUSS TO COLUMN HIGH STRENGTH BOLT CONNECTIONS SHALL BE INSTALLED USING THE "TURN-OF-NUT" METHOD PER SECTION 407.06(b)3 OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS 2002.

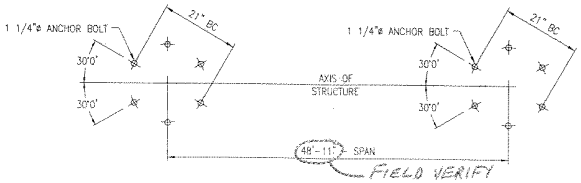
ANCHOR NOTE:

USE STEEL SETTING & EMBEDDED TEMPLATES TO ASSURE PROPER ANCHOR BOLT LAYOUT & ALIGNMENT.

REUSE SETTING TEMPLATE AT SIMILAR LOCATIONS.



LOWER CONNECTION DETAIL
(LEFT COLUMN SHOWN. RIGHT COLUMN SIMILAR)



ANCHOR BOLT LAYOUT
LOC. GANTRY NB

COMMONWEALTH OF VIRGINIA
TIMOTHY D. CAVENY
Lic. NO. 044008
PROFESSIONAL ENGINEER
2/29/08

REV:							
PRINTS ISSUED							
FOR	#	DATE	FOR	#	DATE	FOR	#	DATE

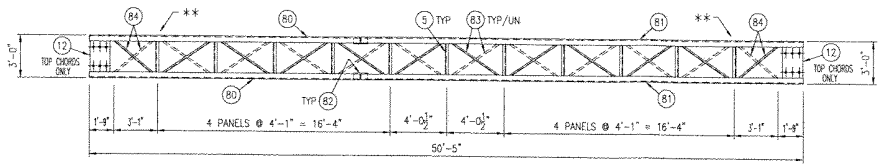
HURTT FABRICATING CORP.
P.O. BOX 128
MARCELINE, MO 64658

CUSTOMER: VENTURE ELECTRIC CO

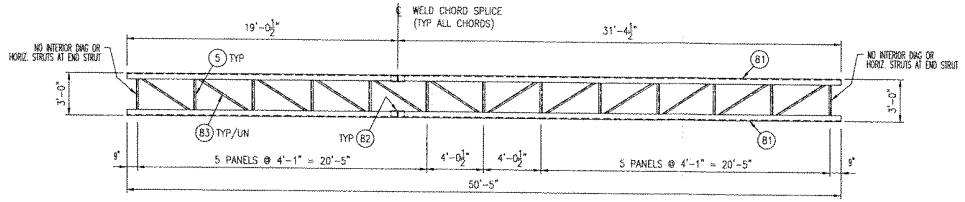
PROJECT: CONTRACT NO. PEL-2006
POWHITE PARKWAY EXPRESS LANES PROJECT
RICHMOND METROPOLITAN AUTHORITY

SUBJECT: ERECTION DIAGRAM FOR LOC. NORTH BOUND
GANTRY @ STA 619+01.21

FILE:	4871 GN E1 PKG F		DATE: 2-13-08	PKG:	F
PRINTED FOR: RICHMOND METRO AUTHORITY	DR BY: JBS	CH BY: TAP	JOB NO: HP-4871	SHEET E1	



PLAN



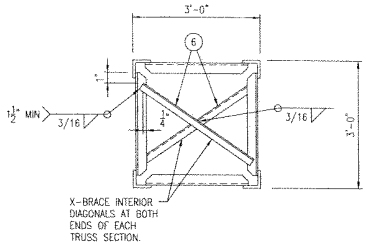
ELEVATION
ONE REQ'D - SPAN SECTION - MK P3A

BILL OF MATERIAL				
QTY	MK	DESCRIPTION	LENGTH	REMARKS
4	B0	L 4 x 4 x 3/8	19'-0"	
4	B1	L 4 x 4 x 3/8	31'-4"	
4	B2	L 4 x 4 x 3/8	1'-0"	
44	B3	L 2 x 2 x 3/16	4'-4 1/8"	
4	B4	L 2 x 2 x 3/16	3'-9"	
48	5	L 2 x 2 x 3/16	2'-7"	
13	6	L 2 x 2 x 3/16	3'-7"	
2	12	PL 1/2 X 17	2'-8"	
24	END COLUMN	3/4"ø HS6	2 1/2"	W/NUT & 2-FLAT WASHER

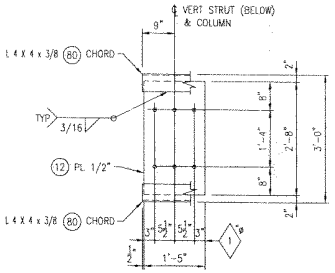
SHOP DRAWING REVIEW
HNTB Corporation

Review is for general compliance with contract documents. Sole responsibility for correctness of dimensions, details, quantities and safety during fabrication and erection shall remain with the Contractor.

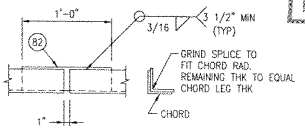
☒ No Exceptions Taken
☐ Make Correction Noted By AN
☐ Amend and Resubmit
☐ Rejected - See Remarks Date 3/22/08



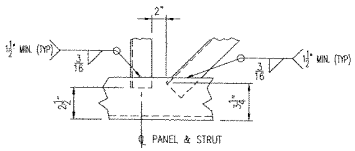
TYPICAL TRUSS SECTION END



TOP CHORD MOUNTING PLATE
LEFT SECTION SHOWN
RIGHT SECTION SIMILAR



WELD CHORD SPLICE



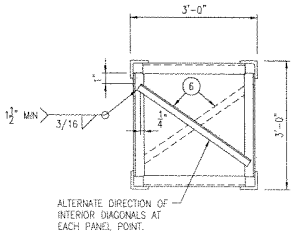
TYPICAL STRUT & DIAGONAL CONNECTION

CAMBER NOTES:

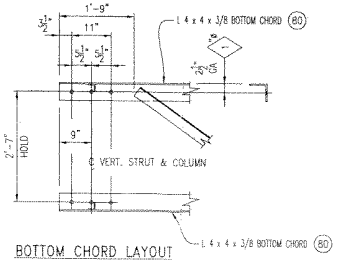
PROVIDE ¾" OF CAMBER AT CENTERLINE OF TRUSS

MATERIAL SPECIFICATIONS:

STEEL SHAPES & PLATE - ASTM A36
GALVANIZE AFTER FAB PER ASTM A123
HS BOLTS - ASTM A325 TYPE 1
NUTS - ASTM A563 DH
WASHERS - ASTM F436
GALVANIZE HARDWARE PER ASTM A153



TYPICAL TRUSS SECTION



BOTTOM CHORD LAYOUT
LEFT SECTION SHOWN
RIGHT SECTION SIMILAR

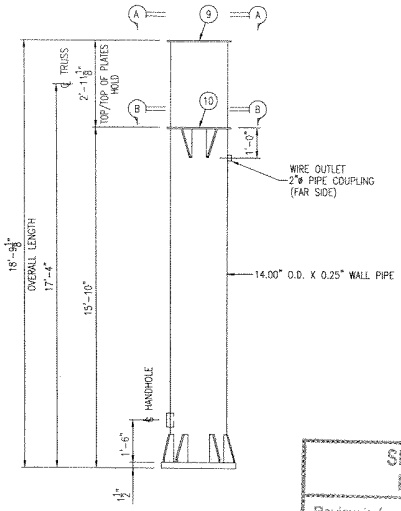
COMMONWEALTH OF VIRGINIA
TIMOTHY D. CAVENY
Lic. No. 044008
PROFESSIONAL ENGINEER
3/29/08

REV:								
PRINTS ISSUED								
FOR	#	DATE	FOR	#	DATE	FOR	#	DATE

HURTT FABRICATING CORP.
P.O. BOX 128
MARCELINE, MO 64658

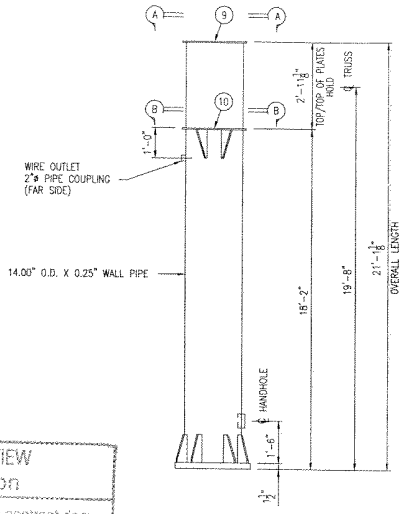
CUSTOMER:	VENTURE ELECTRIC CO.
PROJECT:	CONTRACT NO. PEL-2006 POWHITE PARKWAY EXPRESS LANES PROJECT RICHMOND METROPOLITAN AUTHORITY
SUBJECT:	FABRICATION DETAILS FOR GANTRY TRUSS LOC. NORTH BOUND GANTRY

FILE: 4871 GN GANTRY TRUSS PKG F	DATE: 2-13-08	PKG: F	
PRINTED FOR: RICHMOND METRO AUTHORITY	DR BY: JBS	CH BY: TAP	JOB NO: HF-4871	SHEET 1 OF 2



LEFT END COLUMN DETAIL

ONE REQ'D – MK P3EL



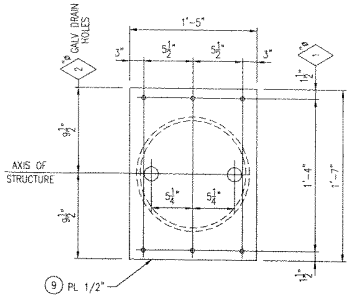
RIGHT END COLUMN DETAIL

ONE REQ'D – MK P3ER

SHOP DRAWING REVIEW
HNTB Corporation

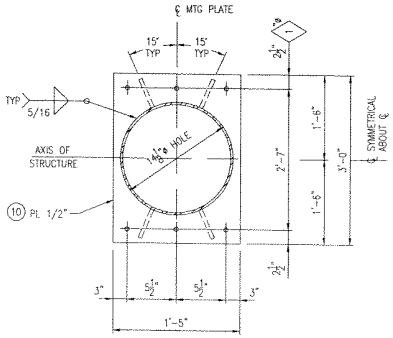
Review is for general compliance with contract documents. Sole responsibility for correctness of dimensions, details, quantities and safety during fabrication and erection shall remain with the Contractor.

☒ No Exceptions Taken
☐ Make Correction Noted By _____
☐ Amend and Resubmit
☐ Rejected – See Remarks Date 3/27/08



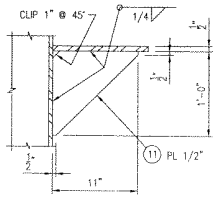
VIEW A–A

UPPER MOUNTING PLATE



SECTION B–B

LOWER MOUNTING PLATE

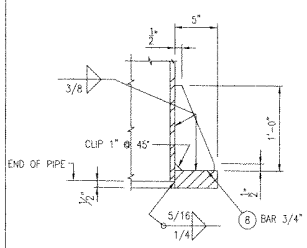


TRUSS CONNECTION GUSSET

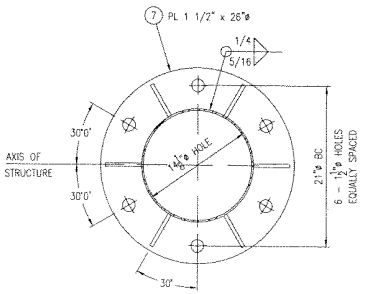
REQUIRED @ BOTTOM CONNECTION ONLY

BILL OF MATERIAL

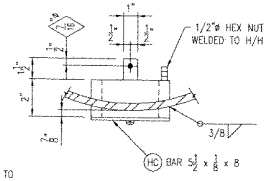
QTY	MK	DESCRIPTION	LENGTH	REMARKS
1	P3EL	14.00" O.D. x 0.25" WALL PIPE	18'-8 1/8"	
1	P3ER	14.00" O.D. x 0.25" WALL PIPE	21'-0 1/8"	
2	7	PL 1 1/2 x 26"ø		
12	8	PL 3/4 x 5	1'-0"	
2	9	PL 1/2 x 17	1'-7"	
2	10	PL 1/2 x 17	3'-0"	
8	11	PL 1/2 x 11	1'-0"	
2	HF	PL 2 x 5 1/2	0'-8"	
2	HC	BAR 5 1/2 x 1/8	0'-8"	
2	CB	BAR 1 x 1/4	0'-1 1/2"	
2	GROUND LUG	1/2"ø HEX NUT		A307
4	HAND HOLE	3/8"ø HEX BOLT	1 1/4"	W/LOCKNUT (A307)
4		3/8"ø RD HD CAP SCREW	3/4"	W/LOCK WASHER (A307)
2		3/16"ø GALV. CHAIN	1'-6"	
2		2"ø PIPE COUPLING & PLUG		



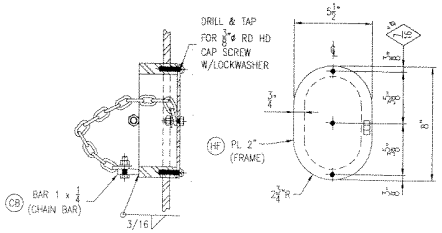
BASE PLATE WELD & GUSSET DETAIL



BASE PLATE DETAIL



NOTE:
ATTACH ⅜"ø x 1'-6" CHAIN TO HANDHOLE FRAME & COVER USING ⅜"ø x 1¼" HEX BOLT W/LOCKNUT



HANDHOLE DETAIL

MATERIAL SPECIFICATIONS:

COLUMN PIPE – A500 GR B or API 5L X42, X52, or X60 (42 KSI MIN. YIELD)
STEEL BARS & PLATES – ASTM A36
GALV. STEEL AFTER FAB PER ASTM A123

STD BOLTS, NUTS, & WASHERS – ASTM A307
GALV. HARDWARE PER ASTM A153

REV:

PRINTS ISSUED								
FOR	#	DATE	FOR	#	DATE	FOR	#	DATE

COMMONWEALTH OF VIRGINIA
TIMOTHY D. CAVENY
Lic. No. 044008
PROFESSIONAL ENGINEER
2/29/08

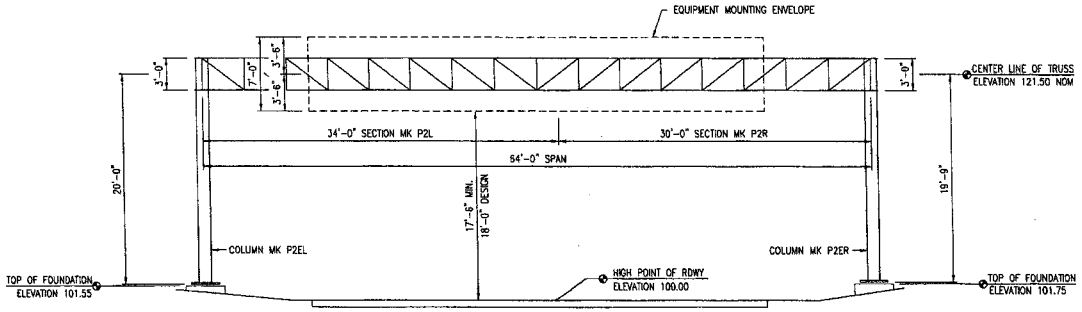
HURTT FABRICATING CORP.
P.O. BOX 128
MARCELINE, MO 64658

CUSTOMER: VENTURE ELECTRIC CO.

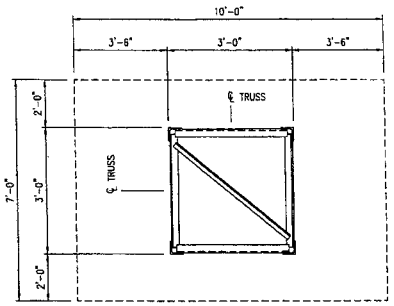
PROJECT: CONTRACT NO. PEL-2006
POWHITE PARKWAY EXPRESS LANES PROJECT
RICHMOND METROPOLITAN AUTHORITY

SUBJECT: FABRICATION DETAILS FOR GANTRY END COLUMNS
LOC. NORTH BOUND GANTRY

FILE: 4871 GANTRY END COLUMN PKG F	DATE: 2-13-08	PKG:	F
PRINTED FOR: RICHMOND METRO AUTHORITY	DR BY: JBS	CH BY: TAP	JOB NO: HF-4871	SHEET 2 OF 2



ELEVATION
STR. GANTRY SB



TYPICAL SECTION
EQUIPMENT MOUNTING ENVELOPE

GENERAL NOTES:

STRUCTURE DESIGN PER AASHTO STANDARD SPECS. FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRS AND TRAFFIC SIGNALS, 1994 EDITION.

DESIGN WIND SPEED 80 MPH.

ALL WELDING PER AWS D1.1 (LATEST EDITION).

STRUCTURE DESIGN BY HURTT FABRICATING CORP.

ANCHOR BOLT & FOUNDATION DESIGN BY HNTB.

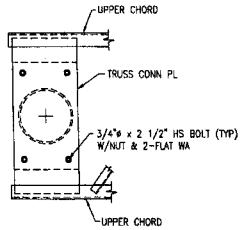
EQUIPMENT MOUNTING BRACKETS & HARDWARE BY OTHERS.

FOUNDATION & ROADWAY ELEVATIONS PROVIDED BY VENTURE ELECTRIC CO. ON 6-12-07.

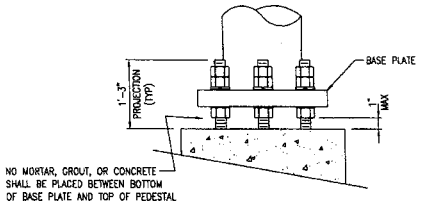
THE ELEVATIONS SHOWN ARE FOR REFRENCE AND RELATIONSHIP ONLY AND ARE NOT THE ACTUAL SITE ELEVATIONS.

17'-6" MINIMUM (18'-0" DESIGN) CLEARANCE FROM THE HIGH POINT OF THE ROADWAY TO THE BOTTOM OF THE EQUIPMENT MOUNTING ENVELOPE.

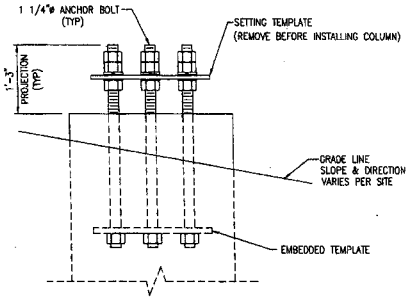
THE TRUSS SPLICE CONNECTION SHALL BE MADE USING HIGH STRENGTH BOLTS & DTI WASHERS. TIGHTENING SHALL CONFORM TO SECTION 407.06(b)3 OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS 2002 AND THE DTI MANUFACTURERS INSTRUCTIONS. THE TRUSS TO COLUMN HIGH STRENGTH BOLT CONNECTIONS SHALL BE INSTALLED USING THE "TURN-OF-NUT" METHOD PER SECTION 407.06(b)3 OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS 2002.



UPPER CONNECTION DETAIL
(LEFT COLUMN SHOWN. RIGHT COLUMN SIMILAR)



BASE PLATE ERECTION

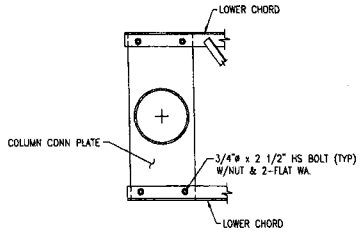


TYPICAL FOUNDATION ELEVATION

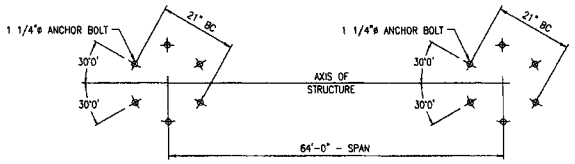
ANCHOR NOTE:

USE STEEL SETTING & EMBEDDED TEMPLATES TO ASSURE PROPER ANCHOR BOLT LAYOUT & ALIGNMENT.

REUSE SETTING TEMPLATE AT SIMILAR LOCATIONS.



LOWER CONNECTION DETAIL
(LEFT COLUMN SHOWN. RIGHT COLUMN SIMILAR)



ANCHOR BOLT LAYOUT
LOC. GANTRY SB

REV:								
PRINTS ISSUED								
FOR	#	DATE	FOR	#	DATE	FOR	#	DATE

COMMONWEALTH OF VIRGINIA
David L. Cowell
Lic. No. 030335
PROFESSIONAL ENGINEER

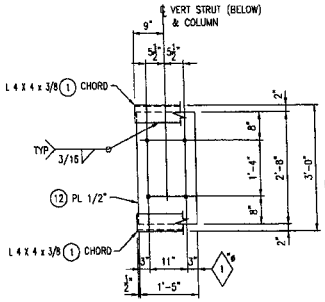
HURTT FABRICATING CORP.
P.O. BOX 128
MARCELINE, MO 64658

CUSTOMER: VENTURE ELECTRIC CO.

PROJECT: CONTRACT NO. PEL-2006
POWHITE PARKWAY EXPRESS LANES PROJECT
RICHMOND METROPOLITAN AUTHORITY

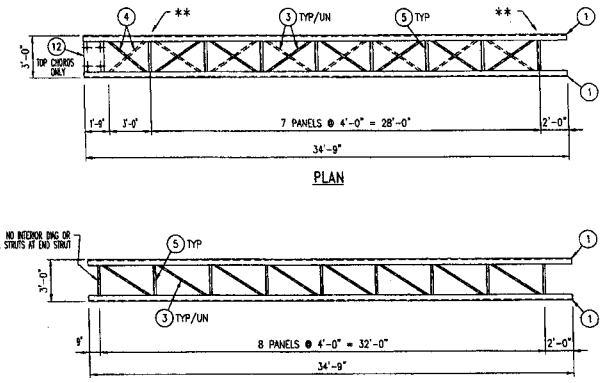
SUBJECT: ERECTION DIAGRAM FOR LOC. SOUTH BOUND GANTRY

FILE:	4871 OH E1B		DATE: 6-22-07		PKG:	B
PRINTED FOR:	DR BY:	CH BY:	JOB NO:	SHEET
RICHMOND METRO AUTHORITY	TAP	JBS	HF-4871	E1



TOP CHORD MOUNTING PLATE

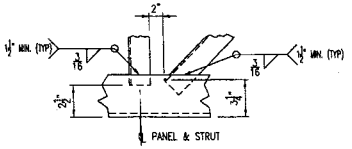
LEFT SECTION SHOWN
RIGHT SECTION SIMILAR



PLAN

ELEVATION

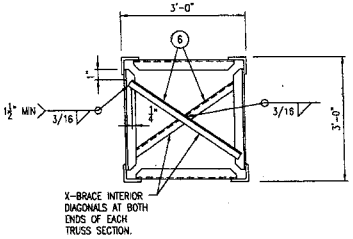
ONE REQ'D - LEFT SECTION - MK P2L



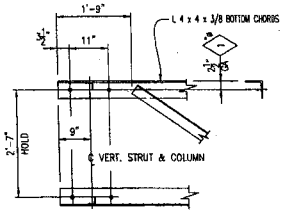
TYPICAL STRUT & DIAGONAL CONNECTION

BILL OF MATERIAL

QTY	MK	DESCRIPTION	LENGTH	REMARKS
4	1	L 4 x 4 x 3/8	34'-9"	
4	2	L 4 x 4 x 3/8	30'-8 3/4"	
4	PP1	L 4 x 4 x 3/8	1'-3"	
4	P1	L 2 1/2 x 2 1/2 x 1/4	4'-5 9/16"	
56	3	L 2 x 2 x 3/16	4'-3 5/16"	
4	4	L 2 x 2 x 3/16	3'-8 1/4"	
84	5	L 2 x 2 x 3/16	2'-7"	
19	6	L 2 x 2 x 3/16	3'-7"	
2	12	PL 1/2 X 17	2'-8"	
16	ASST	5/8"ø HSB	2"	W/NUT & FLAT WASHER
16		5/8"ø D.T.I. WASHER		
48	SPLICE	5/8"ø HSB	2"	W/NUT & FLAT WASHER
48		5/8"ø D.T.I. WASHER		
16	END COLUMN	3/4"ø HSB	2 1/2"	W/NUT & 2-FLAT WASHER

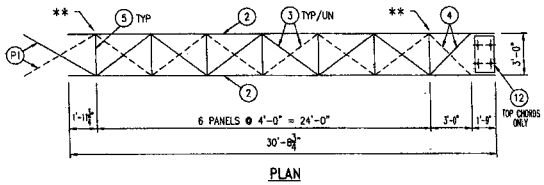


TYPICAL TRUSS SECTION END

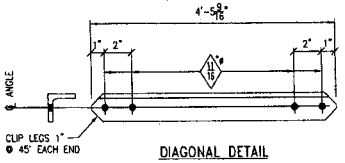


BOTTOM CHORD LAYOUT

LEFT SECTION SHOWN
RIGHT SECTION SIMILAR

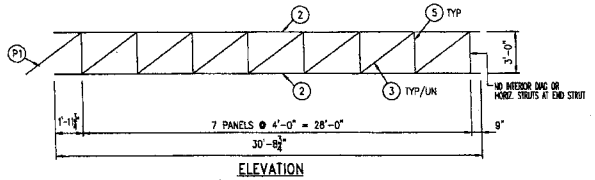


PLAN



DIAGONAL DETAIL

4 REQ'D - L 2 1/2 x 2 1/2 x 1/4 - MK P1



ELEVATION

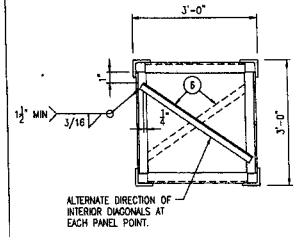
ONE REQ'D - RIGHT SECTION - MK P2R

CAMBER NOTES:

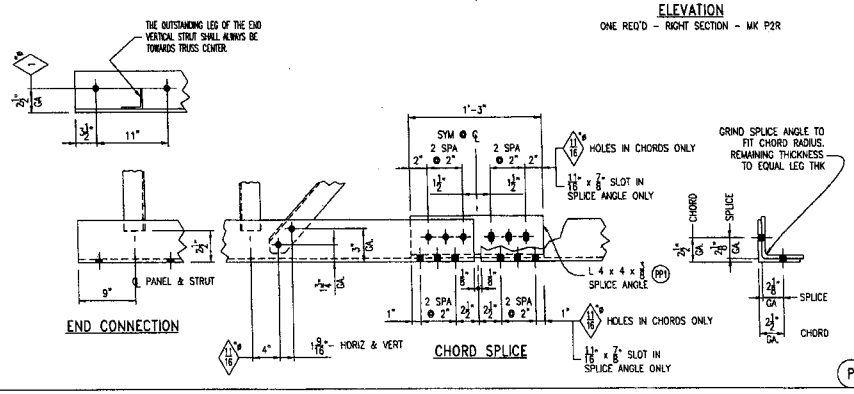
PROVIDE 1 1/16" OF CAMBER AT CENTERLINE OF TRUSS

MATERIAL SPECIFICATIONS:

STEEL SHAPES & PLATE - ASTM A36
GALVANIZE AFTER FAB PER ASTM A123
HS BOLTS - ASTM A325 TYPE 1
NUTS - ASTM A563 DH
WASHERS - ASTM F436
D.T.I. WASHERS - ASTM F959
GALVANIZE HARDWARE PER ASTM A153



TYPICAL TRUSS SECTION



END CONNECTION

REV:							
PRINTS ISSUED							
FOR	#	DATE	FOR	#	DATE	FOR	# DATE

COMMONWEALTH OF VIRGINIA
David C. Cowell
Lic. No. 030335
6/27/07
PROFESSIONAL ENGINEER

HURTT FABRICATING CORP.
P.O. BOX 128
MARCELINE, MO 64658

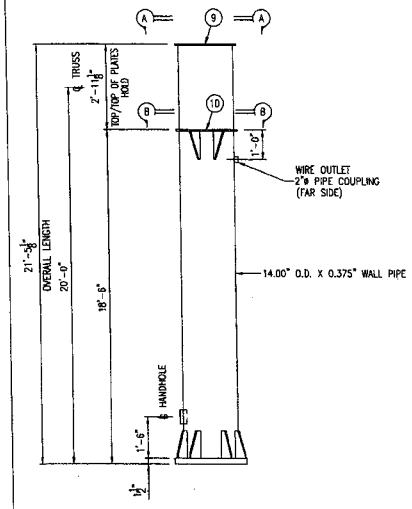
CUSTOMER: VENTURE ELECTRIC CO.

PROJECT: CONTRACT NO. PEL-2006
POWHITE PARKWAY EXPRESS LANES PROJECT
RICHMOND METROPOLITAN AUTHORITY

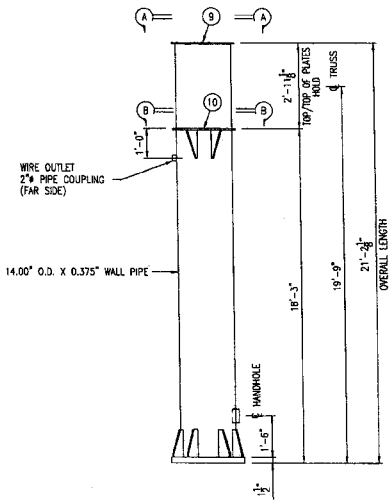
SUBJECT: FABRICATION DETAILS FOR GANTRY TRUSS
LOC. SOUTH BOUND GANTRY

FILE:	DATE:	PKG:
4871 OH GANTRY TRUSS	6-25-07	B

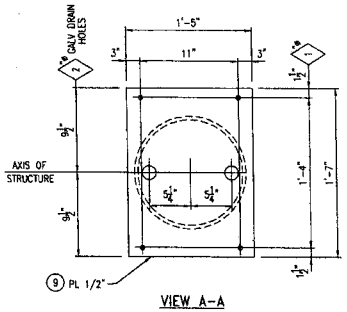
PRINTED FOR:	DR BY:	CH BY:	JOB NO:	SHEET
RICHMOND METRO AUTHORITY	TAP	JBS	HF-4871	1 OF 2



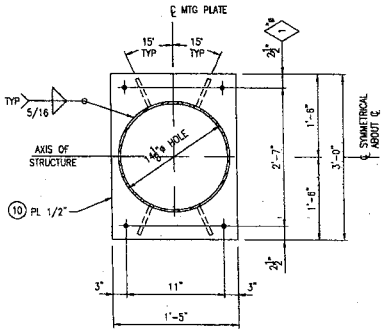
LEFT END COLUMN DETAIL
ONE REQ'D - MK P2EL



RIGHT END COLUMN DETAIL
ONE REQ'D - MK P2ER



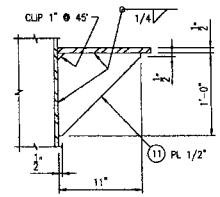
VIEW A-A
UPPER MOUNTING PLATE



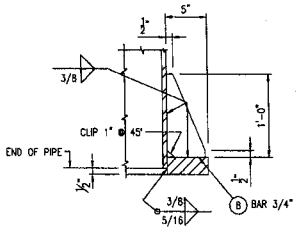
SECTION B-B
LOWER MOUNTING PLATE

BILL OF MATERIAL

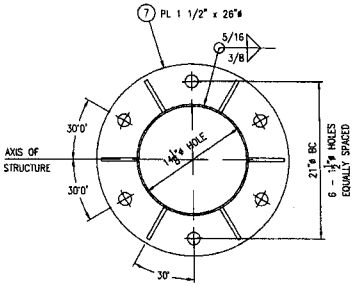
QTY	MK	DESCRIPTION	LENGTH	REMARKS
1	P2EL	14.00" O.D. x 0.375" WALL PIPE	21'-4 1/8"	
1	P2ER	14.00" O.D. x 0.375" WALL PIPE	21'-1 1/8"	
2	7	PL 1 1/2 x 26"ø		
12	8	PL 3/4 x 5	1'-0"	
2	9	PL 1/2 x 17	1'-7"	
2	10	PL 1/2 x 17	3'-0"	
8	11	PL 1/2 x 11	1'-0"	
2	HF	PL 2 x 5 1/2	0'-8"	
2	HC	BAR 5 1/2 x 1/8	0'-8"	
2	HK	BAR 1 1/2 x 3/8	0'-6"	
2	GROUND LUG HARDWARE	3/8"ø HEX NUT		A307
2		3/8"ø HEX BOLT	3"	W/LOCK WASHER (A307)
2		2"ø PIPE COUPLING & PLUG		



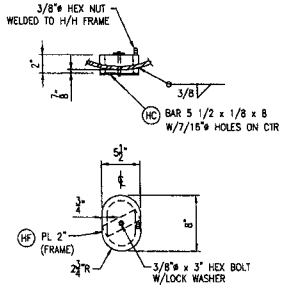
TRUSS CONNECTION GUSSET
REQUIRED @ BOTTOM CONNECTION ONLY



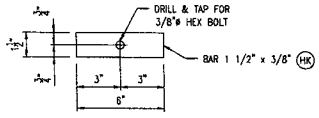
BASE PLATE WELD & GUSSET DETAIL



BASE PLATE DETAIL



HANDHOLE DETAIL



KEEPER BAR

MATERIAL SPECIFICATIONS:

COLUMN PIPE – A500 GR B or API 5L X42, X52, or X60 (42 KSI MIN. YIELD)
STEEL BARS & PLATES – ASTM A36
GALV. STEEL AFTER FAB PER ASTM A123

STD BOLTS, NUTS, & WASHERS – ASTM A307
GALV. HARDWARE PER ASTM A153

REV:

PRINTS ISSUED							
FOR	#	DATE	FOR	#	DATE	FOR	#	DATE

COMMONWEALTH OF VIRGINIA
David L. Cowell
Lic. No. 030335
PROFESSIONAL ENGINEER

HURTT FABRICATING CORP.
P.O. BOX 128
MARCELINE, MO 64658

CUSTOMER: VENTURE ELECTRIC CO.

PROJECT: CONTRACT NO. PEL-2006
POWHITE PARKWAY EXPRESS LANES PROJECT
RICHMOND METROPOLITAN AUTHORITY

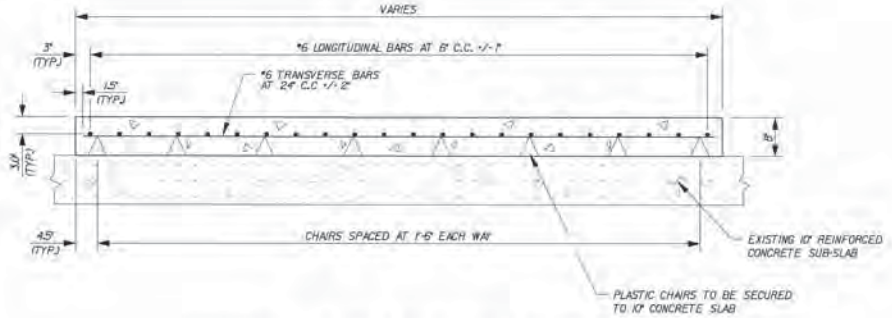
SUBJECT: FABRICATION DETAILS FOR GANTRY END COLUMNS
LOC. SOUTH BOUND GANTRY

FILE: 4871 GANTRY END COLUMN	DATE: 6-25-07	PKG:	B

PRINTED FOR:	DR BY:	CH BY:	JOB NO:	SHEET
RICHMOND METRO AUTHORITY	TAP	JBS	HF-4871	2 OF 2

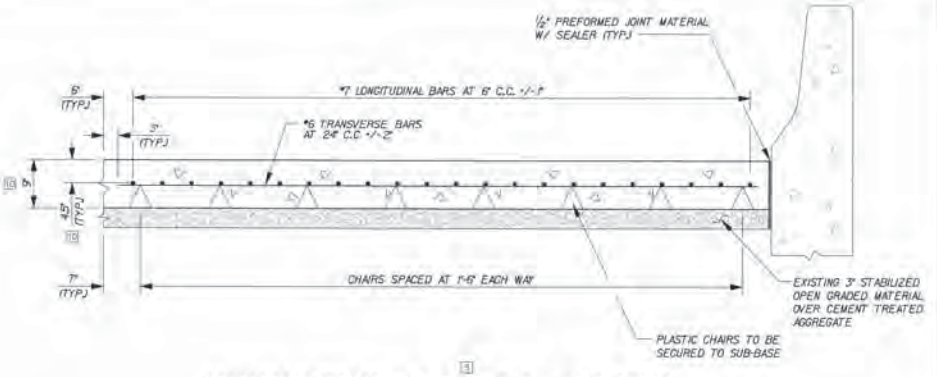
SOUTHBOUND POWHITE PARKWAY TOLL PLAZA

ORIGINAL PLANS - ADMINISTRATION BUILDING & TOLL PLAZA



PROPOSED TOLL PLAZA 8" PAVEMENT SLAB SECTION

NTS



PROPOSED EXPRESS LANE 9" PAVEMENT SLAB SECTION

NTS

NOTES:

1. CONTRACTOR TO SUBMIT POUR SEQUENCE PRIOR TO POUR FOR APPROVAL BY THE ENGINEER.
2. SEE VDOT SPECIFICATION PR-3 AND PR-6 FOR DETAILS NOT SHOWN ON THIS SHEET.
3. SLAB CONCRETE SHALL BE TYPE AA, HIGH EARLY CONCRETE WITH NON-METALLIC FIBERGLASS ADDITIVE.
4. REINFORCING BARS SHALL BE V-ROD REINFORCING BARS MANUFACTURED BY CONCRETE PROTECTION SYSTEMS INC. OR ENGINEER APPROVED EQUAL.
5. REINFORCING BARS SHALL BE SECURED USING PLASTIC TIES, NYLON TIES, OR PLASTIC SNAP TIES. NO METAL TIES OR TIES CONTAINING METAL SHALL BE USED.
6. ALL WORK SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.
7. PLASTIC OR NON-METALLIC (NON CORROSIVE) CHAIRS SHALL BE USED TO ELEVATE REBAR AT LOCATIONS SHOWN.
8. REBAR SHALL BE SECURED TO CHAIRS.
9. CHAIRS SHALL BE SECURED TO 10" SLAB OR 3" SUB-BASE BY METHOD(S) APPROVED BY ENGINEER.
10. CONTRACTOR TO COORDINATE PLACEMENT OF LOOPS WITH ORT CONTRACTOR PRIOR TO POURING CONCRETE AND PRIOR TO SAW-CUTTING JOINTS.

REVISIONS
10 4/10/08 REVISED SHEET — SEE SHEET 1C
9 3/5/08 REVISED SHEET — SEE SHEET 1C
8 12/03/07 ADDED SHEET

08-01A

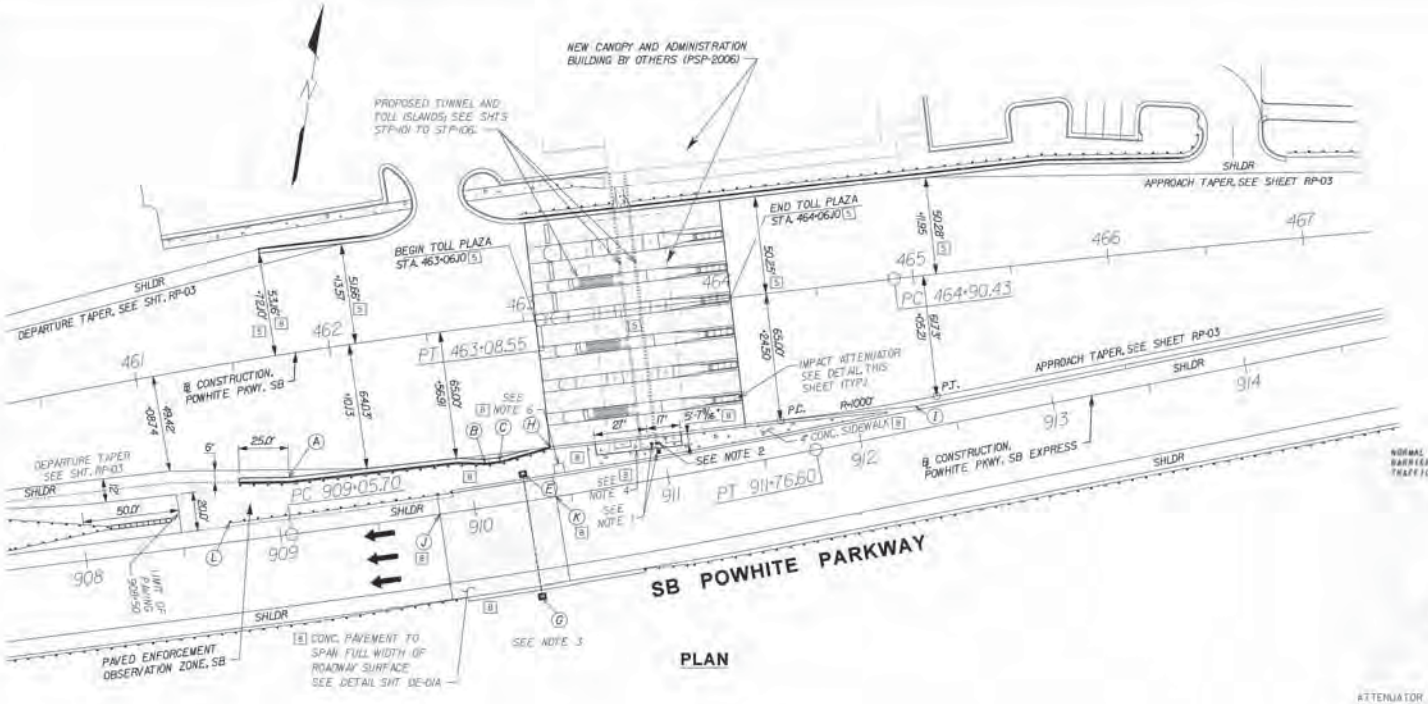
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

POWHITE PARKWAY EXPRESS TOLL LANES PROJECT

MISCELLANEOUS ROADWAY DETAILS

HNTB
9990 GUILFORD ROAD, SUITE 100
COLUMBIA, MARYLAND 21046
(301) 549-1000

Scale:	Date:	Contract No.:	Sheet:
NONE	3/06/08	PEL-2006	42A of 161



PLAN

ATTENUATOR SHALL BE TRINITY TRACC "SHORTRACC", OR ENERGY ABSORPTION SYSTEMS "QUAD GUARD – 30-03-1", OR APPROVED EQUAL, AND SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS

PLAN

SECTION A-A

TOLL ISLAND ATTENUATOR DETAIL

NOT TO SCALE

HORIZONTAL CONTROL POINT SCHEDULE

POINT NO.	LOCATION	DESCRIPTION
Ⓐ	STA. 461+69.06, 62.55' RT., POWHITE PKWY. SB	EDGE OF GUTTER PAN
Ⓑ	STA. 462+71.5, 69.35' RT., POWHITE PKWY. SB	FACE OF CURB (SET BACK FOR INLET)
Ⓒ	STA. 462+79.00, 69.35' RT., POWHITE PKWY. SB	FACE OF CURB (SET BACK FOR INLET)
[3]		
Ⓔ	STA. 910+27, 14.00' LT., POWHITE PKWY. SB EXPRESS	CENTER GANTRY FOUNDATION TY. I
[6]		
Ⓖ	STA. 910+27, 50.00' RT., POWHITE PKWY. SB EXPRESS	CENTER GANTRY FOUNDATION TY. I
[5]	STA. 463+06.05, 65.00' RT., POWHITE PKWY. SB	FACE OF CURB/END OF BARRIER
Ⓘ	STA. 464+93.82, 65.67' RT., POWHITE PKWY. SB	BEGIN MEDIAN BARRIER TRANSITION
[8]	STA. 909+82, 0.00' RT., POWHITE PKWY. SB EXPRESS	LIMIT OF 9" CONC. PAVEMENT [10]
[8]	STA. 910+42, 0.00' RT., POWHITE PKWY. SB EXPRESS	LIMIT OF 9" CONC. PAVEMENT [10]
Ⓛ	STA. 908+75, 10.00' LT., POWHITE PKWY. SB EXPRESS	BEGIN GUARD RAIL

NOTES:

1. ELECTRICAL EQUIPMENT TO BE INSTALLED BY OTHERS.
2. MECHANICAL EQUIPMENT TO BE INSTALLED BY OTHERS.
3. SEE SHEET SM-40 FOR GANTRY FOUNDATION DETAILS.
4. [8] LIMITS OF 10" BASE SLAB (WITH 9" MIN.) SURFACE SLAB PER SHEET STP-105 SECTION A-A.
5. [8] SEE SHEET DE-05A FOR SPOT ELEVATIONS BETWEEN EXPRESS LANE AND TOLL PLAZA.
6. [8] SEE SHEET DE-05A FOR CONCRETE PAD FOR ORT EQUIPMENT ENCLOSURE.

REVISIONS
[10] 4/10/08: REVISED SHEET – SEE SHEET 1C
[9] 10/03/07: REVISED SHEET – SEE SHEET 1C
[8] 8/21/07: REVISED DIMENSION – SEE SHEET 1B
[1] 6/23/06: ADDED SHEET

DE-05 OF 06

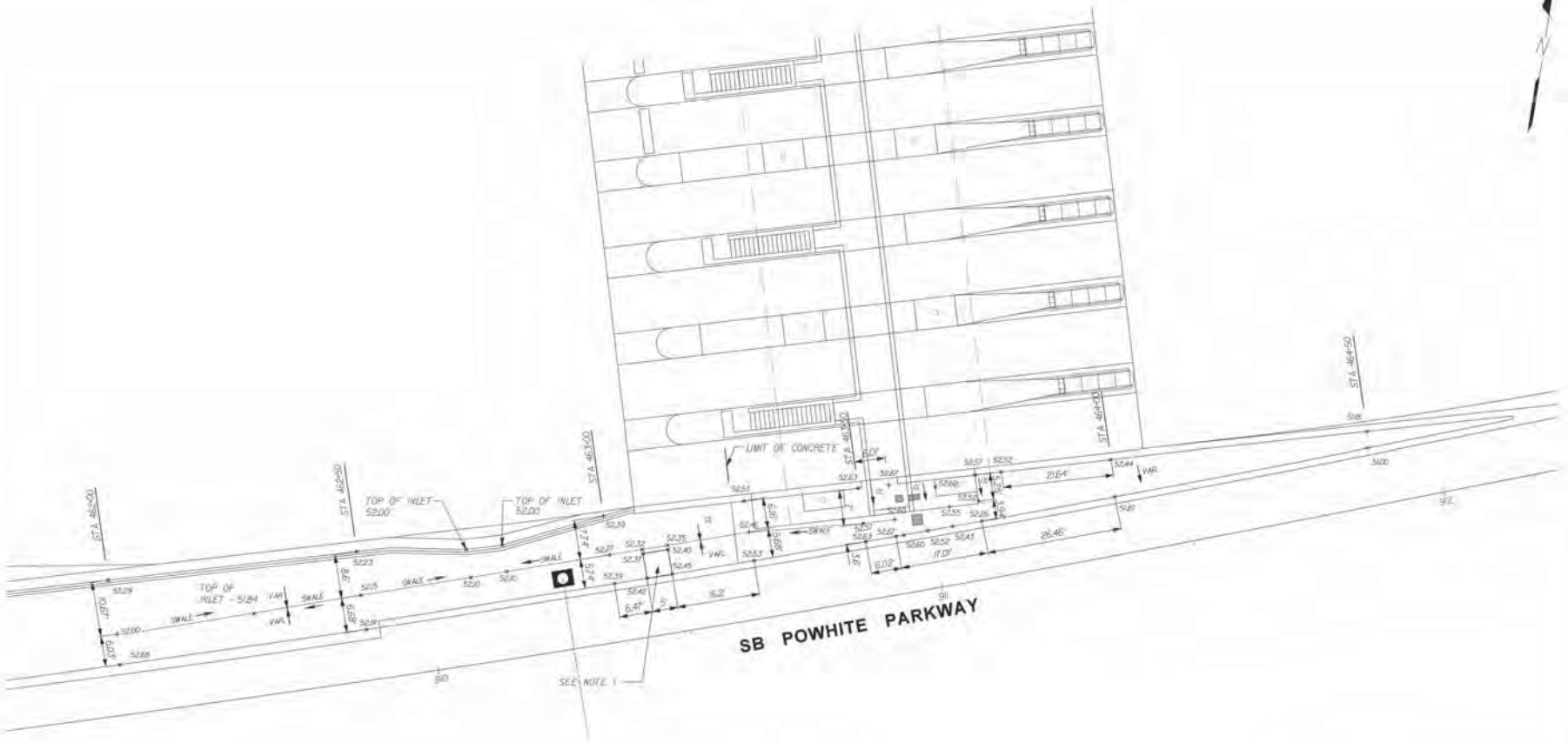
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

POWHITE PARKWAY EXPRESS TOLL LANES PROJECT

MISCELLANEOUS DETAILS
NEW TOLL PLAZA

Scale:	Date:	Contract No.:	Sheet:
1" = 30'	3/06/08	PEL-2006	46 of 181

HNTB
#175 GUILFORD ROAD, SUITE 100
COLUMBIA, MARYLAND 21046
(301) 543-1000



NOTES:

1. CONCRETE PAD FOR ORT EQUIPMENT ENCLOSURE. COORDINATE EXACT LOCATION AND REQUIRED DEPTH OF PAD WITH ORT CONTRACTOR.
2. COORDINATE PLACEMENT OF ORT CONDUITS AND EQUIPMENT WITH ORT CONTRACTOR PRIOR TO STARTING WORK.

PLAN

DE-05A OF 06

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

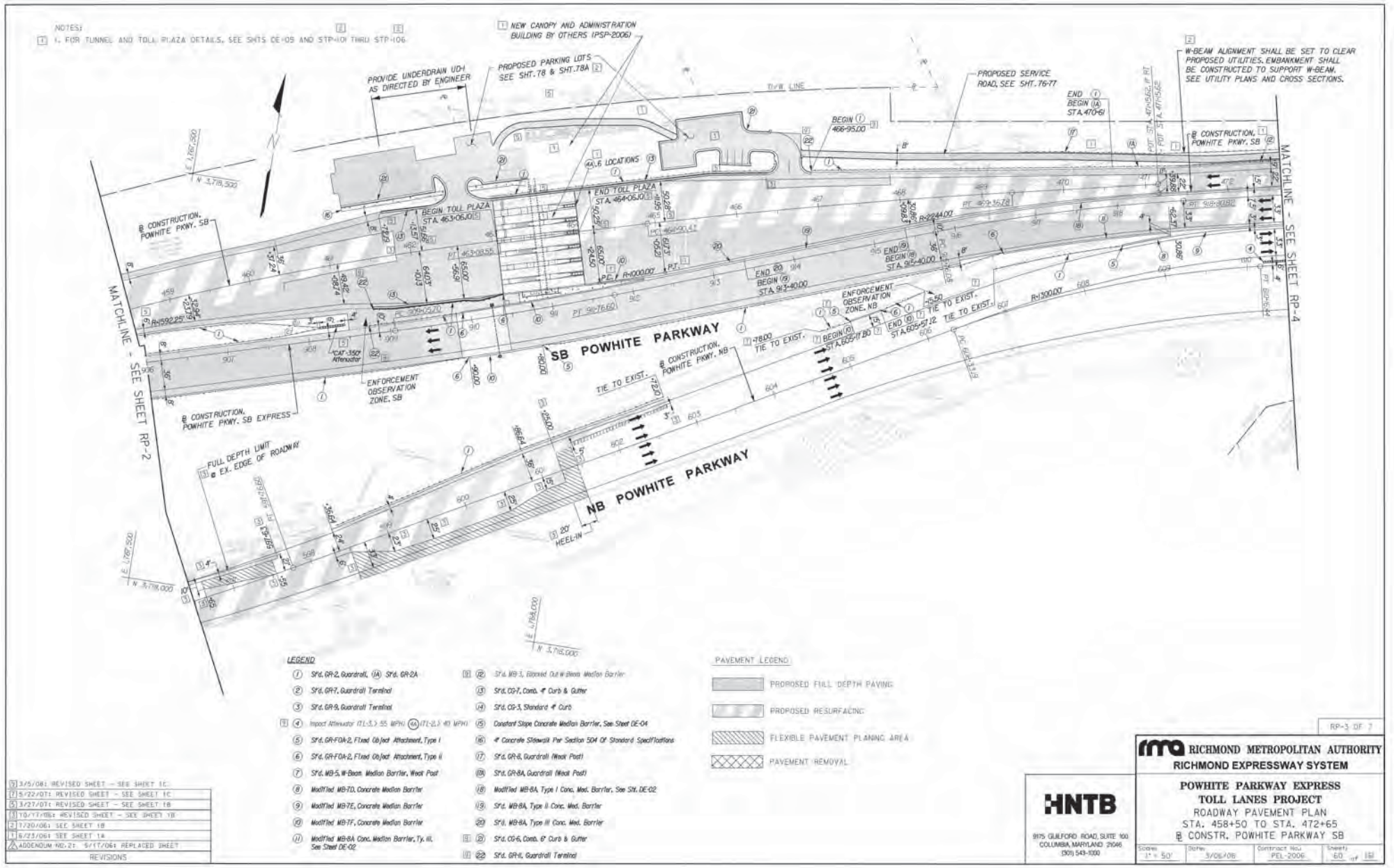
POWHITE PARKWAY EXPRESS TOLL LANES PROJECT

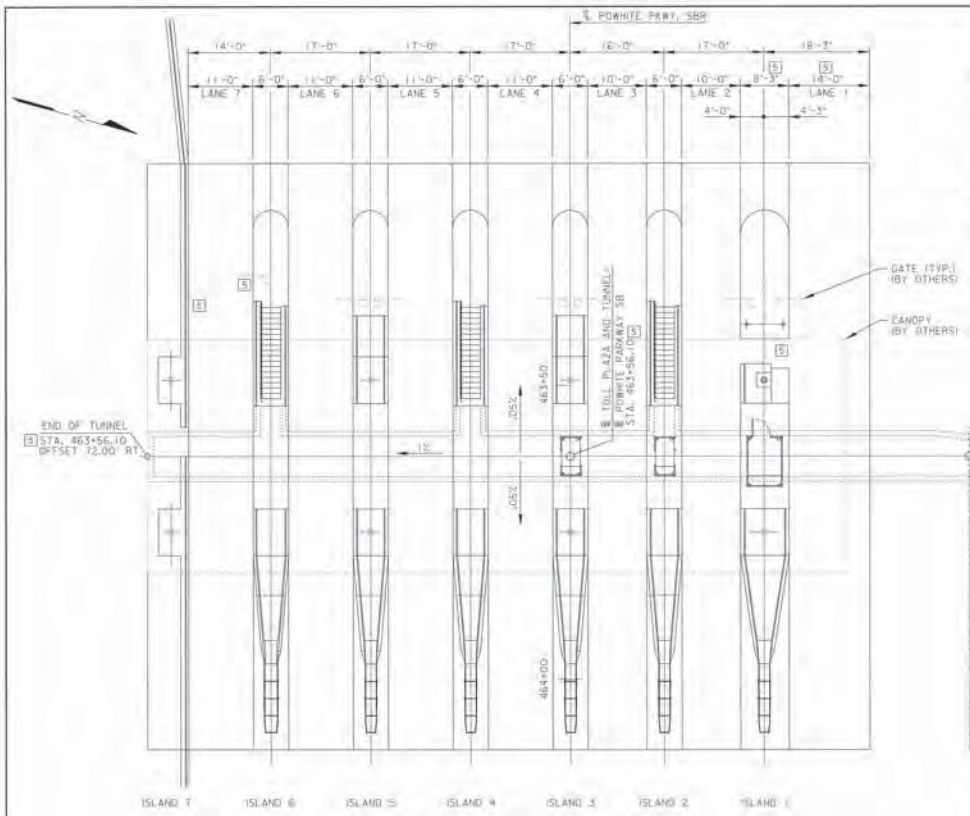
MISCELLANEOUS DETAILS
NEW TOLL PLAZA

Scale:	Date:	Contract No.:	Sheet:
1" = 10'	10/03/01	PEL-2006	46A of 161

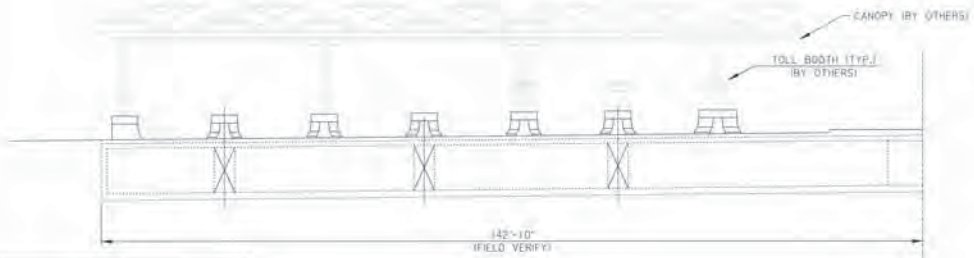
HNTB
9175 GUILFORD ROAD, SUITE 100
COLUMBIA, MARYLAND 21046
(301) 543-1000

REVISIONS
(B) 10/3/01 - ADDED SHEET


NOTES:
1. FOR TUNNEL AND TOLL PLAZA DETAILS, SEE SHTS DE-05 AND STP-101 THRU STP-106
NEW CANOPY AND ADMINISTRATION BUILDING BY OTHERS (PSP-2006)
PROVIDE UNDERDRAIN UD-1 AS DIRECTED BY ENGINEER
PROPOSED PARKING LOTS SEE SHT. 78 & SHT. 78A
PROPOSED SERVICE ROAD, SEE SHT. 76-77
W-BEAM ALIGNMENT SHALL BE SET TO CLEAR PROPOSED UTILITIES. EMBANKMENT SHALL BE CONSTRUCTED TO SUPPORT W-BEAM. SEE UTILITY PLANS AND CROSS SECTIONS.
BEGIN TOLL PLAZA STA. 463+06.10
END TOLL PLAZA STA. 464+05.10
4A,6 LOCATIONS
BEGIN STA. 466+95.00
END BEGIN STA. 470+61
@ CONSTRUCTION, POWHITE PKWY. SB
@ CONSTRUCTION, POWHITE PKWY. SB EXPRESS
@ CONSTRUCTION, POWHITE PKWY. NB
SB POWHITE PARKWAY
NB POWHITE PARKWAY
ENFORCEMENT OBSERVATION ZONE, SB
ENFORCEMENT OBSERVATION ZONE, NB
"CAT-350" Attenuator
TIE TO EXIST.
FULL DEPTH LIMIT @ EX. EDGE OF ROADWAY
20' HEEL-IN
MATCHLINE - SEE SHEET RP-2
MATCHLINE - SEE SHEET RP-4
R=592.25'
R=1000.00'
R=2244.00'
R=1300.00'
LEGEND
(1) Std. GR-2, Guardrail, (1A) Std. GR-2A
(2) Std. GR-7, Guardrail Terminal
(3) Std. GR-9, Guardrail Terminal
(4) Impact Attenuator (TL-3,) 55 MPH) (4A) (TL-2,) 40 MPH)
(5) Std. GR-FOA-2, Fixed Object Attachment, Type I
(6) Std. GR-FOA-2, Fixed Object Attachment, Type II
(7) Std. MB-5, W-Beam Median Barrier, Weak Post
(8) Modified MB-7D, Concrete Median Barrier
(9) Modified MB-7E, Concrete Median Barrier
(10) Modified MB-7F, Concrete Median Barrier
(11) Modified MB-8A Conc. Median Barrier, Ty. III, See Sheet DE-02
(12) Std. MB-3, Blocked Out W-Beam Median Barrier
(13) Std. CG-7, Comb. 4" Curb & Gutter
(14) Std. CG-3, Standard 4" Curb
(15) Constant Slope Concrete Median Barrier, See Sheet DE-04
(16) 4' Concrete Sidewalk Per Section 504 Of Standard Specifications
(17) Std. GR-8, Guardrail (Weak Post)
(18) Std. GR-8A, Guardrail (Weak Post)
(18) Modified MB-8A, Type I Conc. Med. Barrier, See Sht. DE-02
(19) Std. MB-8A, Type II Conc. Med. Barrier
(20) Std. MB-8A, Type III Conc. Med. Barrier
(21) Std. CG-6, Comb. 6" Curb & Gutter
(22) Std. GR-11, Guardrail Terminal
PAVEMENT LEGEND
PROPOSED FULL DEPTH PAVING
PROPOSED RESURFACING
FLEXIBLE PAVEMENT PLANING AREA
PAVEMENT REMOVAL
3/5/08: REVISED SHEET - SEE SHEET 1C
5/22/07: REVISED SHEET - SEE SHEET 1C
3/27/07: REVISED SHEET - SEE SHEET 1B
10/17/06: REVISED SHEET - SEE SHEET 1B
7/20/06: SEE SHEET 1B
6/23/06: SEE SHEET 1A
ADDENDUM NO. 2: 5/17/06: REPLACED SHEET
REVISIONS
RP-3 OF 7
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY EXPRESS
TOLL LANES PROJECT
ROADWAY PAVEMENT PLAN
STA. 458+50 TO STA. 472+65
@ CONSTR. POWHITE PARKWAY SB
HNTB
8175 GUILFORD ROAD, SUITE 100
COLUMBIA, MARYLAND 21046
(301) 543-1000
Scale: 1" = 50'
Date: 5/08/06
Contract No.: PEL-2006
Sheet: 60 of 152



PLAN OF TOLL PLAZA
SCALE: 1" = 10'-0"



ELEVATION OF TOLL PLAZA
SCALE: 1" = 10'-0"

REVISIONS
5 3/27/07: REVISED ISLANDS 1, 6 & 7
2 7/20/06: REVISED SHEET SIZE AND TITLE BLOCK
1 6/23/06: ADDED SHEET

SPECIFICATIONS:

CONSTRUCTION - VIRGINIA DEPARTMENT OF TRANSPORTATION, ROAD AND BRIDGE SPECIFICATIONS, 2002

DESIGN - 2002 (17TH EDITION) AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, WITH INTERIMS THROUGH 2004

DESIGN LOADS:

ROOF LIVE LOAD	20 PSF
WIND	40 PSF
FLAT ROOF SNOW LOAD	20 PSF

DESIGN STRENGTHS:

CONCRETE	FC': 3000 PSI
REINF. STEEL	FY= 60 KSI

STRUCTURAL STEEL MATERIAL SPECIFICATIONS:

WIDE FLANGE SHAPES	ASTM A992
CHANNELS, ANGLES AND PLATES	ASTM A36
STRUCTURAL TUBING AND PIPE	ASTM A500, GRADE C
HIGH STRENGTH BOLTS	ASTM A325X
ANCHOR BOLTS	ASTM F1554, GRADE 55
HARDENED STEEL WASHERS	ASTM F436

GENERAL NOTES:

ALL SHOP CONNECTIONS SHALL BE WELDED AND ALL FIELD CONNECTIONS SHALL BE BOLTED.

ALL STRUCTURAL STEEL SHALL BE HOT-DIP GALVANIZED PER ASTM A123, UNLESS OTHERWISE NOTED. ALL BOLTS, ANCHOR BOLTS, WASHERS AND NUTS SHALL BE HOT-DIP GALVANIZED PER ASTM A153. THE LOWER CANOPY FRAMING STEEL SHALL BE PAINTED, SEE SPECIAL PROVISIONS.

ALL METAL ROOF DECK SHALL BE 3", 22 GAGE, WIDE RIB TYPE B, GALVANIZED, WITH THE MINIMUM PROPERTIES DEFINED BY THE STEEL DECK INSTITUTE (SDI).

¾" DIAMETER BOLTS SHALL BE USED FOR THE CANOPY STRUCTURE AND ⅝" DIAMETER BOLTS FOR ROOF SCREEN STRUCTURES.

ALL SHOP AND FIELD WELDING SHALL BE PERFORMED BY QUALIFIED WELDERS IN ACCORDANCE WITH AWS D1.1-2002 USING E70XX ELECTRODES.

ALL HOLES REQUIRED IN STRUCTURAL STEEL MEMBERS FOR PIPING AND DUCTWORK SHALL BE SHOWN ON THE SHOP DRAWINGS AND BE MADE IN THE SHOP. NO HOLES SHALL BE CUT IN THE FIELD WITHOUT APPROVAL OF THE ARCHITECT/ENGINEER.

ALL BOLTED CONNECTIONS SHALL BE BEARING TYPE, NON SLIP-CRITICAL, TIGHTENED TO A "SNUG-TIGHT CONDITION" AS DEFINED BY AISC.

THE FRAME OF THE STEEL SKELETON SHALL BE CARRIED UP TRUE AND PLUMB AND TEMPORARY BOLTING AND BRACING SHALL BE INTRODUCED TO SAFELY CARRY ALL LOADS TO WHICH THE STRUCTURE MAY BE SUBJECTED, INCLUDING EQUIPMENT AND OPERATION OF SAME. INDIVIDUAL COLUMNS MUST BE BRACED BEFORE BEAM CONNECTIONS ARE MADE AND BRACING SHALL BE LEFT IN PLACE AS LONG AS MAY BE REQUIRED FOR SAFETY.

AFTER COMPLETION OF ERECTION, THE OWNER SHALL ENGAGE AN INDEPENDENT TESTING AGENCY TO INSPECT HIGH STRENGTH BOLTED CONNECTIONS, TO PERFORM TESTS, AND TO PREPARE TEST REPORTS. THE TESTING AGENCY SHALL CONDUCT AND INTERPRET TESTS AND STATE IN EACH REPORT WHETHER THE TEST RESULTS COMPLY WITH THE REQUIREMENTS AND SPECIFICALLY STATE ANY DEVIATIONS THERE FROM. THE TESTING SHALL CONFORM TO THE REQUIREMENTS FOUND IN THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 AND A490 BOLTS", DATED JUNE 2000, WITH SUPPLEMENTS. BOLTS THAT ARE NEITHER NON SLIP CRITICAL NOR SUBJECT TO DIRECT TENSION NEED NOT BE INSPECTED FOR BOLT TENSION OTHER THAN TO INSURE THAT THE PLIES OF THE CONNECTED ELEMENT HAVE BEEN BROUGHT INTO SNUG CONTACT. THE INDEPENDENT TESTING AGENCY SHALL SUBMIT THE INTENDED TEST PROCEDURES TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO BEGINNING TESTING.

FOUNDATIONS

FOUNDATIONS FOR THIS STRUCTURE AND SPREAD FOOTINGS BEARING ON EITHER FIRM VIRGIN SOIL OR COMPACTED STRUCTURAL FILL WITH AN ALLOWABLE BEARING CAPACITY OF 3000 PSF IN ACCORDANCE WITH THE OWNER'S GEOTECHNICAL ENGINEER'S REPORT BY FROEHLING & ROBERTSON, INC. DATED OCTOBER, 2005. THE OWNER'S GEOTECHNICAL ENGINEER SHALL VERIFY, PRIOR TO POURING, THAT THE SOIL IS CAPABLE OF SUSTAINING SUCH A LOAD.

PREPARATION OF SOIL AND SUBGRADE BENEATH FOOTINGS AND SLABS ON GRADE SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE OWNER'S GEOTECHNICAL ENGINEER'S REPORT AND THE PROJECT SPECIFICATIONS.

ALL BACKFILL BEHIND TUNNNEL WALLS SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE OWNER'S GEOTECHNICAL ENGINEER'S REPORT AND THE PROJECT SPECIFICATIONS.

ALL WALLS SUBJECT TO LATERAL LOAD DUE TO UNBALANCED FILL SHALL BE BRACED PLUMB UNTIL BACKFILL HAS BEEN PLACED AND COMPACTED AND SHALL REMAIN BRACED UNTIL THE PERMANENT STRUCTURE ABOVE AND BELOW IS IN PLACE AND CAPABLE OF RESISTING ALL LOADS.

THE CONTRACTOR SHALL VERIFY ALL FIELD MEASUREMENTS, EXISTING DIMENSION, ELEVATIONS, AND THE SHAPES OF SIZES OF EXISTING STRUCTURAL MEMBERS SHOWN ON THE CONTRACT DRAWINGS PRIOR TO BEGINNING WORK. THE ARCHITECT/ENGINEER SHALL BE NOTIFIED IN WRITING OF ALL DISCREPANCIES THAT WOULD RESULT IN REVISIONS TO THE CONTRACT DRAWINGS.

THE CONTRACTOR SHALL VERIFY ALL DRAWINGS FOR COORDINATION BETWEEN TRADES. HE SHALL LOCATE SLOTS, SLEEVES AND TRENCHES AS REQUIRED FOR MECHANICAL TRADES AND PROVIDE AND INSTALL ANCHORS, INSERTS, HANGERS, ETC. AS REQUIRED FOR VARIOUS OTHER TRADES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND ERECTION OF ALL TEMPORARY BRACING, FORMWORK, SHEETING, SHORING AND UNDERPINNING NECESSARY TO PERFORM THE WORK.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR SAFETY PRECAUTIONS AND PROGRAMS AS THEY RELATE TO THE WORK OF THIS PROJECT.

THE CONTRACTOR SHALL SUBMIT THE REQUIRED SHOP DRAWINGS FOR REVIEW PRIOR TO BEGINNING WORK. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS AND ACCEPT FULL RESPONSIBILITY FOR DIMENSIONAL CORRECTNESS. UNDER NO CIRCUMSTANCES SHALL REPRODUCTIONS OF CONTRACT DRAWINGS BE USED AS SHOP DRAWINGS.

ALL STRUCTURAL STEEL SHOP DRAWINGS SHALL BE PREPARED UNDER THE DIRECT SUPERVISION OF PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF VIRGINIA.

STP-101

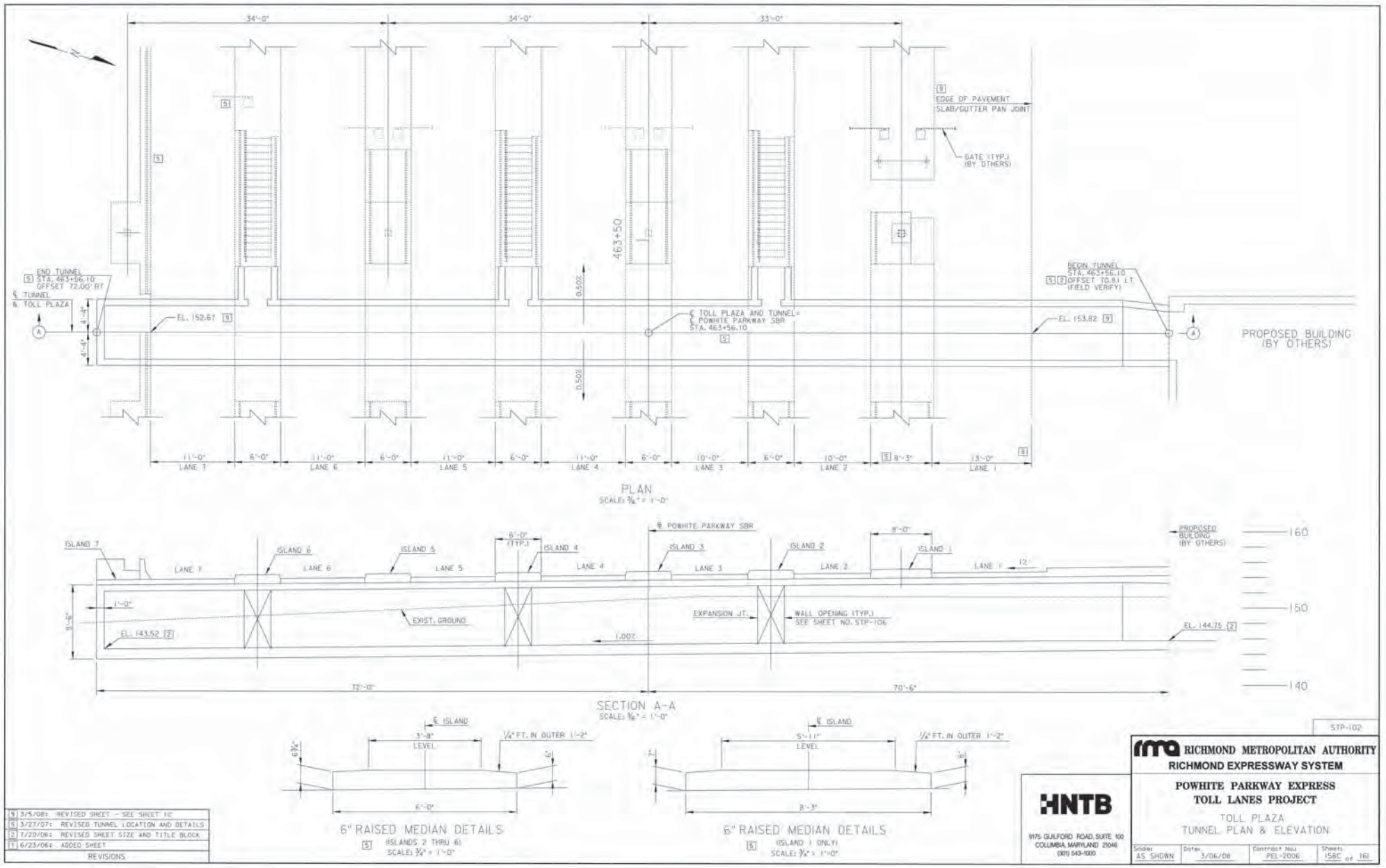
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

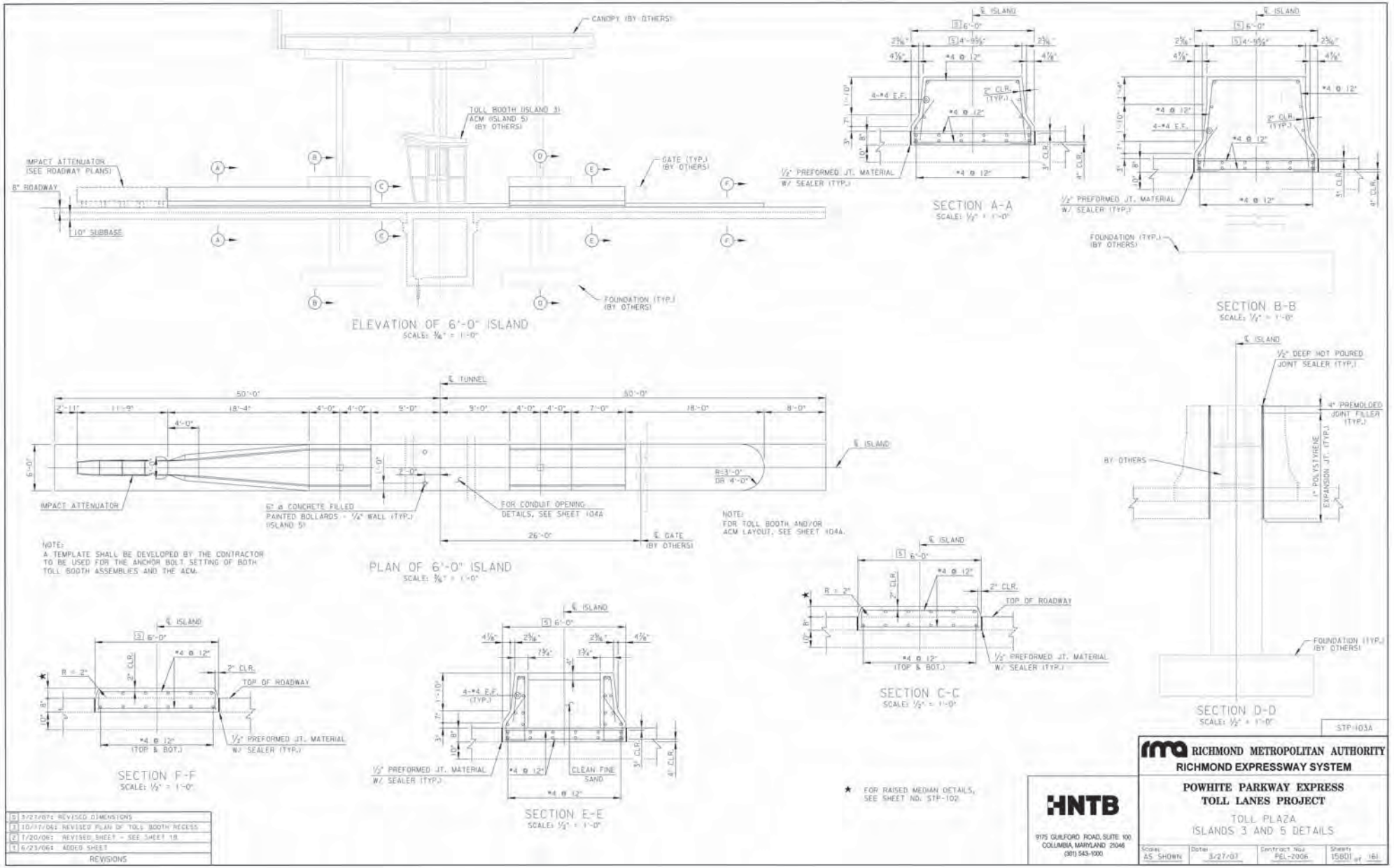
POWHITE PARKWAY EXPRESS TOLL LANES PROJECT

TOLL PLAZA
PLAN AND ELEVATION

HNTB
9175 GUILFORD ROAD, SUITE 100
COLUMBIA, MARYLAND 21046
(301) 543-1000

Scale:	Date:	Contract No.:	Sheet:
1" = 10'	3/27/07	PEL-2006	1588 of 161


34'-0"
34'-0"
33'-0"
EDGE OF PAVEMENT SLAB/GUTTER PAN JOINT
GATE (TYP.) (BY OTHERS)
END TUNNEL STA. 463+56.10 OFFSET 72.00' RT
℄ TUNNEL & TOLL PLAZA
EL. 152.67
463+50
0.50%
℄ TOLL PLAZA AND TUNNEL= ℄ POWHITE PARKWAY SBR STA. 463+56.10
BEGIN TUNNEL STA. 463+56.10 OFFSET 70.81 LT (FIELD VERIFY)
EL. 153.82
PROPOSED BUILDING (BY OTHERS)
11'-0" LANE 7
6'-0"
11'-0" LANE 6
6'-0"
11'-0" LANE 5
6'-0"
11'-0" LANE 4
6'-0"
10'-0" LANE 3
6'-0"
10'-0" LANE 2
8'-3"
13'-0" LANE 1
PLAN
SCALE: 3/16" = 1'-0"
ISLAND 7
ISLAND 6
ISLAND 5
6'-0" (TYP.)
ISLAND 4
℄ POWHITE PARKWAY SBR
ISLAND 3
ISLAND 2
8'-0"
ISLAND 1
LANE 7
LANE 6
LANE 5
LANE 4
LANE 3
LANE 2
LANE 1
12'
PROPOSED BUILDING (BY OTHERS)
160
150
140
1'-0"
EXIST. GROUND
EXPANSION JT.
WALL OPENING (TYP.) SEE SHEET NO. STP-106
EL. 143.52
1.00%
EL. 144.75
72'-0"
70'-6"
SECTION A-A
SCALE: 1/8" = 1'-0"
℄ ISLAND
3'-8" LEVEL
1/4" FT. IN OUTER 1'-2"
6 3/4"
6'-0"
6" RAISED MEDIAN DETAILS
(ISLANDS 2 THRU 6)
SCALE: 3/4" = 1'-0"
℄ ISLAND
5'-11" LEVEL
1/4" FT. IN OUTER 1'-2"
8'-3"
6" RAISED MEDIAN DETAILS
(ISLAND 1 ONLY)
SCALE: 3/4" = 1'-0"
9 3/5/08: REVISED SHEET - SEE SHEET 1C
5 3/27/07: REVISED TUNNEL LOCATION AND DETAILS
2 7/20/06: REVISED SHEET SIZE AND TITLE BLOCK
1 6/23/06: ADDED SHEET
REVISIONS
HNTB
9175 GUILFORD ROAD, SUITE 100
COLUMBIA, MARYLAND 21046
(301) 543-1000
STP-102
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY EXPRESS TOLL LANES PROJECT
TOLL PLAZA
TUNNEL PLAN & ELEVATION
Scales: AS SHOWN
Dates: 3/06/08
Contract No.: PEL-2006
Sheets: 158C of 161


CANOPY (BY OTHERS)
TOLL BOOTH (ISLAND 3)
ACM (ISLAND 5)
(BY OTHERS)
IMPACT ATTENUATOR
(SEE ROADWAY PLANS)
8" ROADWAY
10" SUBBASE
GATE (TYP.)
(BY OTHERS)
FOUNDATION (TYP.)
(BY OTHERS)
ELEVATION OF 6'-0" ISLAND
SCALE: 3/8" = 1'-0"
℄ ISLAND
6'-0"
4'-9½"
2⅜"
4⅛"
#4 @ 12"
2" CLR.
(TYP.)
4-#4 E.F.
1'-10"
7"
3"
8"
10"
3" CLR.
4" CLR.
½" PREFORMED JT. MATERIAL
W/ SEALER (TYP.)
SECTION A-A
SCALE: ½" = 1'-0"
SECTION B-B
SCALE: ½" = 1'-0"
FOUNDATION (TYP.)
(BY OTHERS)
℄ TUNNEL
50'-0"
2'-11"
11'-9"
18'-4"
4'-0"
9'-0"
7'-0"
8'-0"
6'-0"
2'-0"
R=3'-0"
OR 4'-0"
IMPACT ATTENUATOR
6" ø CONCRETE FILLED
PAINTED BOLLARDS - ¼" WALL (TYP.)
(ISLAND 5)
FOR CONDUIT OPENING
DETAILS, SEE SHEET 104A
26'-0"
℄ GATE
(BY OTHERS)
NOTE:
FOR TOLL BOOTH AND/OR
ACM LAYOUT, SEE SHEET 104A.
NOTE:
A TEMPLATE SHALL BE DEVELOPED BY THE CONTRACTOR
TO BE USED FOR THE ANCHOR BOLT SETTING OF BOTH
TOLL BOOTH ASSEMBLIES AND THE ACM.
PLAN OF 6'-0" ISLAND
SCALE: ⅜" = 1'-0"
½" DEEP HOT POURED
JOINT SEALER (TYP.)
4" PREMOLDED
JOINT FILLER
(TYP.)
1" POLYSTYRENE
EXPANSION JT. (TYP.)
BY OTHERS
FOUNDATION (TYP.)
(BY OTHERS)
SECTION D-D
SCALE: ½" = 1'-0"
R = 2"
TOP OF ROADWAY
(TOP & BOT.)
SECTION C-C
SCALE: ½" = 1'-0"
SECTION F-F
SCALE: ½" = 1'-0"
7¾"
13¾"
4"
CLEAN FINE
SAND
SECTION E-E
SCALE: ½" = 1'-0"
★ FOR RAISED MEDIAN DETAILS,
SEE SHEET NO. STP-102
5 5/27/07: REVISED DIMENSIONS
4 10/17/06: REVISED PLAN OF TOLL BOOTH RECESS
3 7/20/06: REVISED SHEET - SEE SHEET 1B
2 6/23/06: ADDED SHEET
REVISIONS
HNTB
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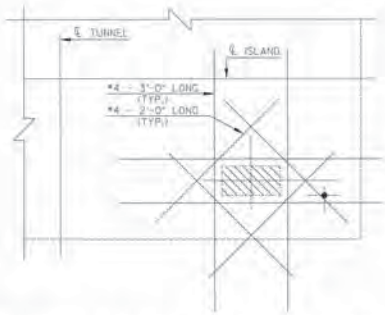
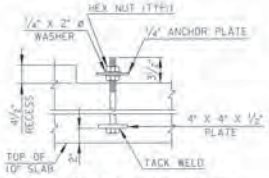
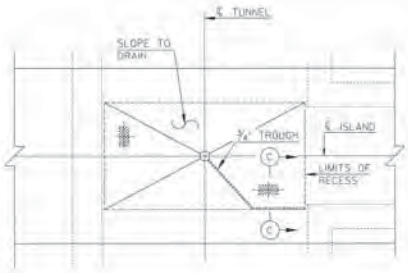
COLUMBIA, MARYLAND 21046
(301) 543-1000
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY EXPRESS
TOLL LANES PROJECT
TOLL PLAZA
ISLANDS 3 AND 5 DETAILS
STP-103A
Scale: AS SHOWN
Date: 3/27/07
Contract No: PEL-2006
Sheets: 15801 of 161



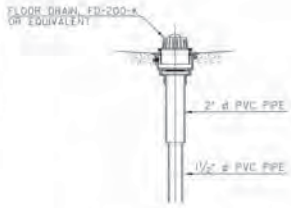
[5] TYPICAL CUT OUT REINFORCEMENT DETAIL
(AT TUNNEL ROOF SLAB)
SCALE: 1½" = 1'-0"



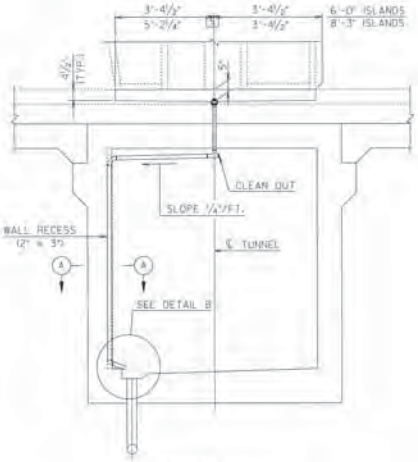
DETAIL OF ANCHOR BOLT
FOR TOLL BOOTH
SCALE: 1½" = 1'-0"



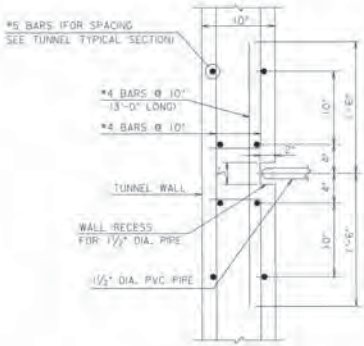
PLAN OF TOLL BOOTH DRAINAGE
SCALE: ½" = 1'-0"



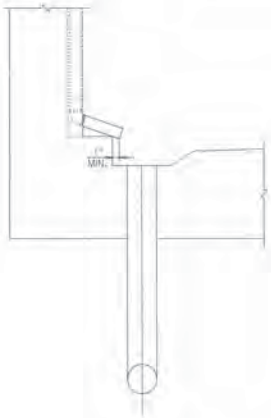
FLOOR DRAIN DETAIL
NO SCALE



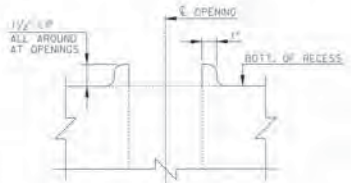
SECTION G-G
SCALE: ½" = 1'-0"
[5]



SECTION A-A
SCALE: 1½" = 1'-0"
[5]



DETAIL B
SCALE: 1½" = 1'-0"
[5]



SECTION C-C
SCALE: 3" = 1'-0"

NOTE:
FOR LOCATION OF SECTION G-G,
SEE SHEET STP-103C OR STP-104C

[5] 3/27/07 - REVISED CUT OUT DETAIL & SECT. F-F
[3] 10/17/06 - ADDED A-A & DETAIL B; REVISED G-G
[2] 7/20/06 - ADDED SHEET FOR DETAILS PREVIOUSLY SHOWN ON SHEET STP-103
REVISIONS

STP-103B

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

POWHITE PARKWAY EXPRESS
TOLL LANES PROJECT

TOLL PLAZA
TYPICAL DETAILS - I

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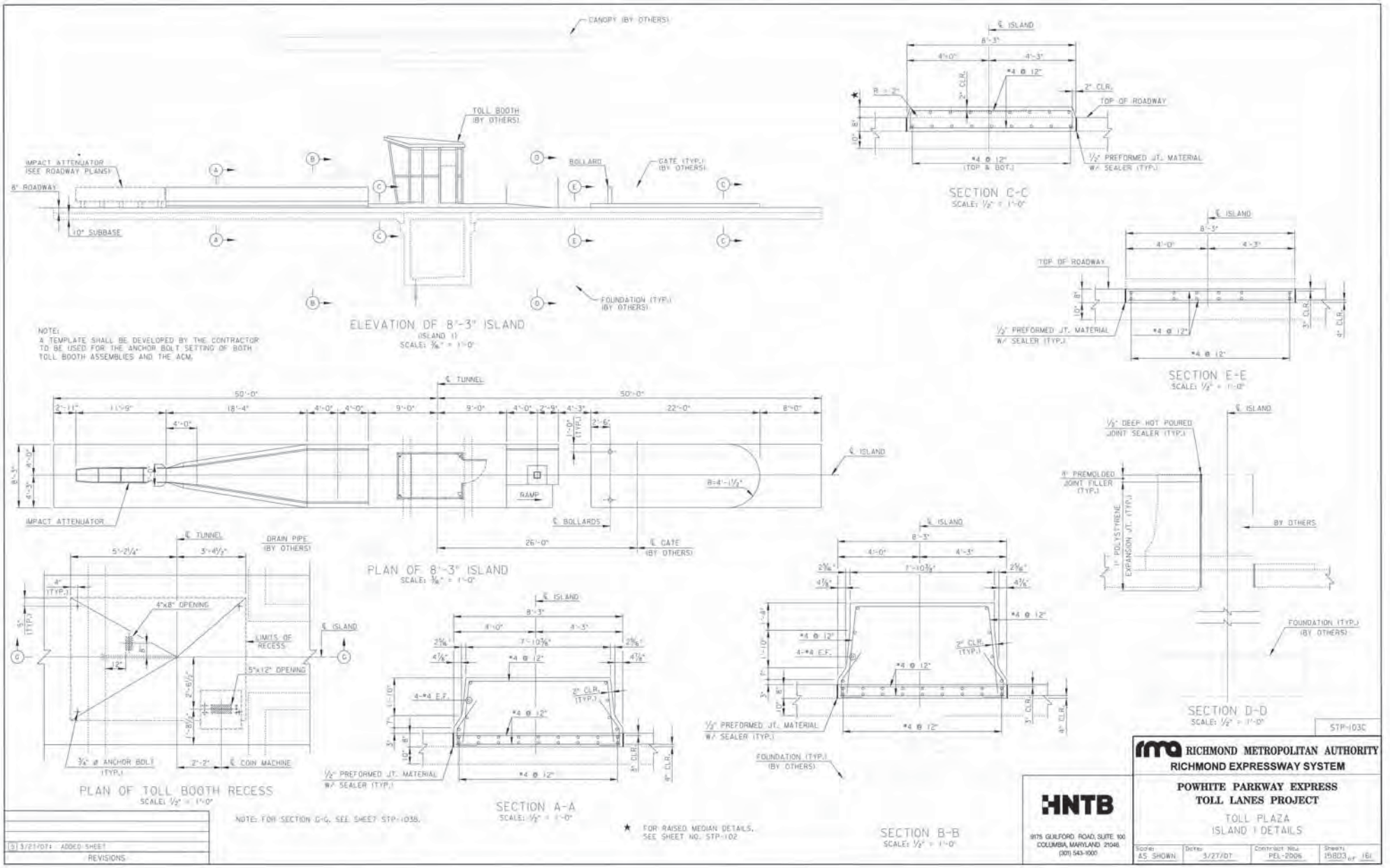
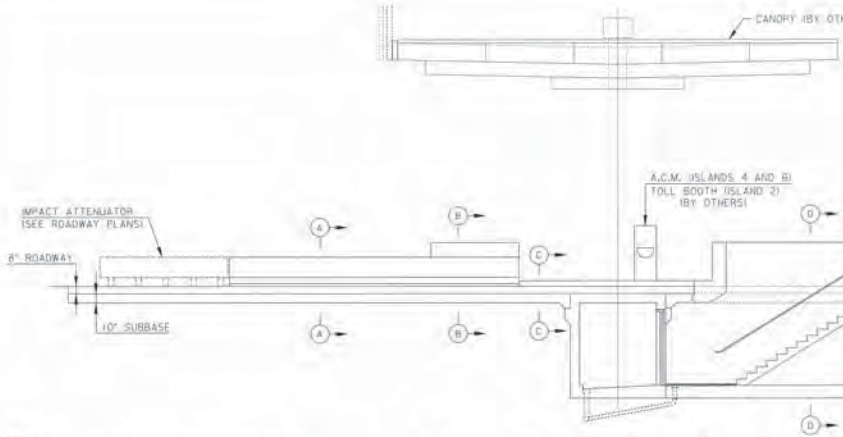
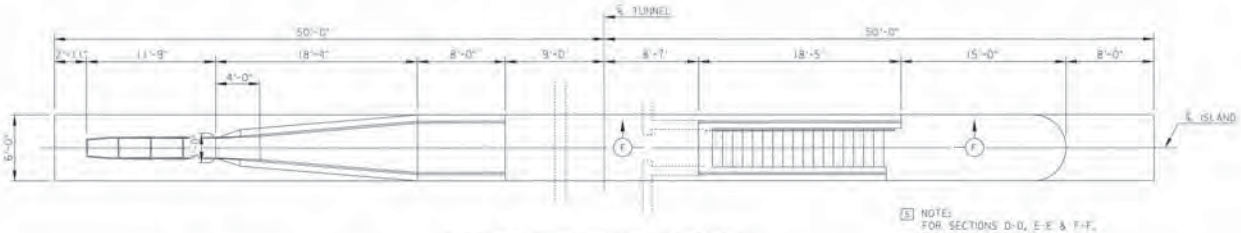
Scale:	Date:	Contract No.:	Sheets:
AS SHOWN	3/27/07	PEL-2006	15802_07 161


CANOPY (BY OTHERS)
TOLL BOOTH (BY OTHERS)
IMPACT ATTENUATOR (SEE ROADWAY PLANS)
8" ROADWAY
10" SUBBASE
BOLLARD
GATE (TYP.) (BY OTHERS)
FOUNDATION (TYP.) (BY OTHERS)
ELEVATION OF 8'-3" ISLAND
(ISLAND 1)
SCALE: 3/16" = 1'-0"
NOTE:
A TEMPLATE SHALL BE DEVELOPED BY THE CONTRACTOR TO BE USED FOR THE ANCHOR BOLT SETTING OF BOTH TOLL BOOTH ASSEMBLIES AND THE ACM.
℄ ISLAND
8'-3"
4'-0"
4'-3"
*4 @ 12"
2" CLR.
TOP OF ROADWAY
10" 8"
*4 @ 12" (TOP & BOT.)
½" PREFORMED JT. MATERIAL W/ SEALER (TYP.)
SECTION C-C
SCALE: ½" = 1'-0"
℄ TUNNEL
50'-0"
2'-11"
11'-9"
18'-4"
4'-0"
9'-0"
4'-3"
22'-0"
8'-0"
℄ ISLAND
RAMP
IMPACT ATTENUATOR
℄ BOLLARDS
26'-0"
℄ GATE (BY OTHERS)
PLAN OF 8'-3" ISLAND
SCALE: 3/16" = 1'-0"
℄ TUNNEL
DRAIN PIPE (BY OTHERS)
5'-2¼"
3'-4½"
4"x8" OPENING
LIMITS OF RECESS
℄ ISLAND
5"x12" OPENING
¾" ø ANCHOR BOLT (TYP.)
2'-2"
℄ COIN MACHINE
PLAN OF TOLL BOOTH RECESS
SCALE: ½" = 1'-0"
℄ ISLAND
8'-3"
4'-0"
4'-3"
2⅝"
7'-10⅜"
4⅞"
*4 @ 12"
4-#4 E.F.
2" CLR. (TYP.)
½" PREFORMED JT. MATERIAL W/ SEALER (TYP.)
SECTION A-A
SCALE: ½" = 1'-0"
NOTE: FOR SECTION G-G, SEE SHEET STP-103B.
★ FOR RAISED MEDIAN DETAILS, SEE SHEET NO. STP-102
℄ ISLAND
8'-3"
4'-0"
4'-3"
2⅝"
7'-10⅜"
4⅞"
*4 @ 12"
4-#4 E.F.
2" CLR. (TYP.)
½" PREFORMED JT. MATERIAL W/ SEALER (TYP.)
FOUNDATION (TYP.) (BY OTHERS)
SECTION B-B
SCALE: ½" = 1'-0"
℄ ISLAND
TOP OF ROADWAY
½" PREFORMED JT. MATERIAL W/ SEALER (TYP.)
*4 @ 12"
3" CLR.
4" CLR.
SECTION E-E
SCALE: ½" = 1'-0"
½" DEEP HOT POURED JOINT SEALER (TYP.)
℄ ISLAND
8" PREMOLDED JOINT FILLER (TYP.)
1" POLYSTYRENE EXPANSION JT. (TYP.)
BY OTHERS
FOUNDATION (TYP.) (BY OTHERS)
SECTION D-D
SCALE: ½" = 1'-0"
STP-103C
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY EXPRESS TOLL LANES PROJECT
TOLL PLAZA
ISLAND 1 DETAILS
HNTB
9175 GUILFORD ROAD, SUITE 100
COLUMBIA, MARYLAND 21046
(301) 543-1500
Scale: AS SHOWN
Date: 3/27/07
Contract No.: PEL-2006
Sheet: 15803 of 161
5 3/27/07 - ADDED SHEET
REVISIONS



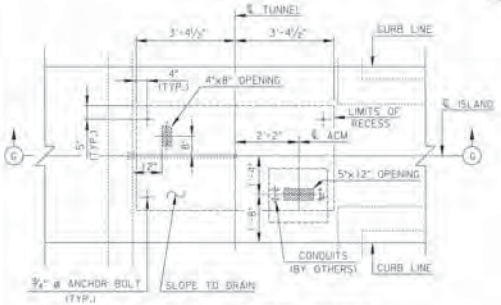
ELEVATION OF 6'-0" ISLAND W/STAIRWAY
SCALE: 3/8" = 1'-0"

NOTE:
A TEMPLATE SHALL BE DEVELOPED BY THE CONTRACTOR TO BE USED FOR THE ANCHOR BOLT SETTING OF BOTH TOLL BOOTH ASSEMBLIES AND THE ACM.

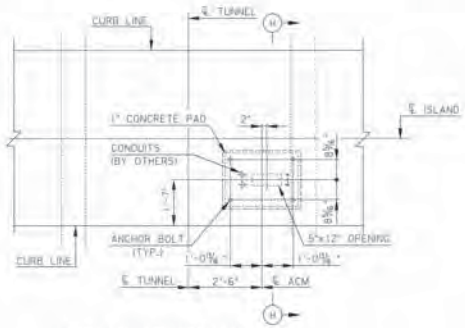


PLAN OF 6'-0" ISLAND W/STAIRWAY
SCALE: 3/8" = 1'-0"

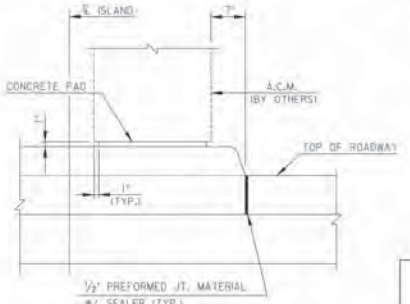
[5] NOTE:
FOR SECTIONS D-D, E-E & F-F, SEE SHEET STP-104B.



[5] PLAN OF TOLL BOOTH RECESS
ISLAND 2 ONLY)
SCALE: 1½" = 1'-0"



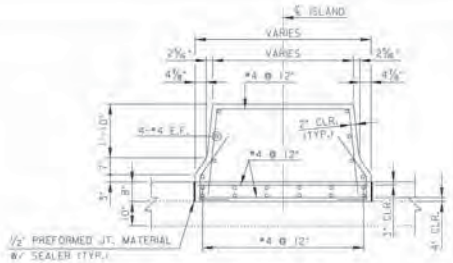
[5] PLAN AT ACM MACHINE
ISLANDS 4 & 6 ONLY)
SCALE: 1½" = 1'-0"



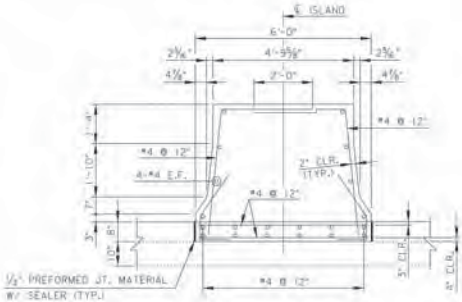
SECTION H-H
SCALE: 1" = 1'-0"

NOTE:
FOR SECTION G-G AND TOLL BOOTH RECESS DRAINAGE DETAIL, SEE SHEET STP-103B.

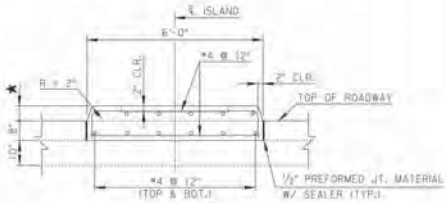
REVISIONS
[5] 3/27/07: REVISED SHEET - SEE SHEET 1B
[2] 7/20/06: REVISED SHEET - SEE SHEET 1B
[1] 6/23/06: ADDED SHEET



SECTION A-A
SCALE: ½" = 1'-0"



SECTION B-B
SCALE: ½" = 1'-0"



SECTION C-C
SCALE: ½" = 1'-0"

★ FOR RAISED MEDIAN DETAILS, SEE SHEET NO. STP-102.

STP-104A

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

POWHITE PARKWAY EXPRESS TOLL LANES PROJECT

TOLL PLAZA
TOLL ISLANDS 2, 4 AND 6 DETAILS - 1

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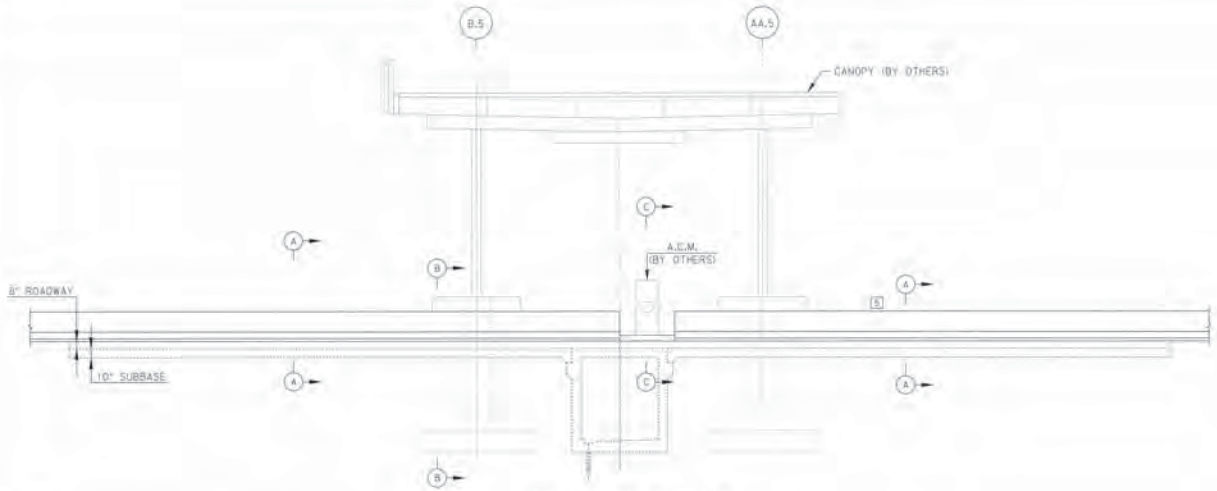
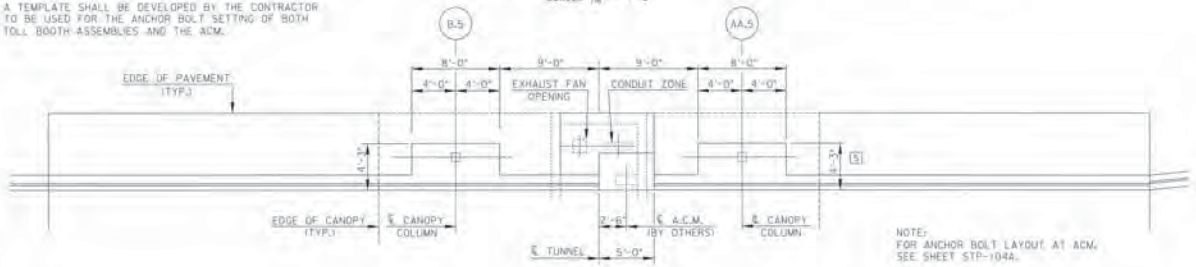


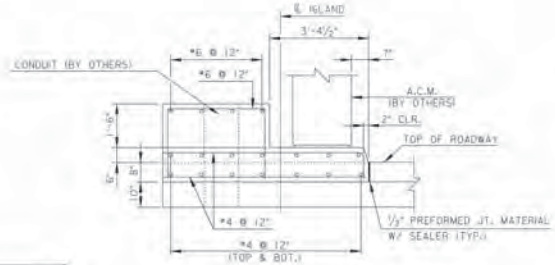
ELEVATION OF ISLAND 7
SCALE: ¾" = 1'-0"

NOTE:
A TEMPLATE SHALL BE DEVELOPED BY THE CONTRACTOR TO BE USED FOR THE ANCHOR BOLT SETTING OF BOTH TOLL BOOTH ASSEMBLIES AND THE ACM.

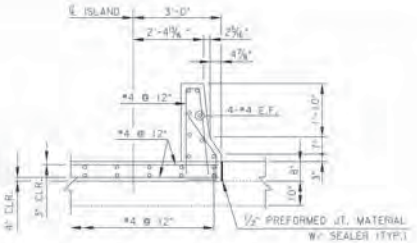


NOTE:
FOR ANCHOR BOLT LAYOUT AT ACM, SEE SHEET STP-104A.

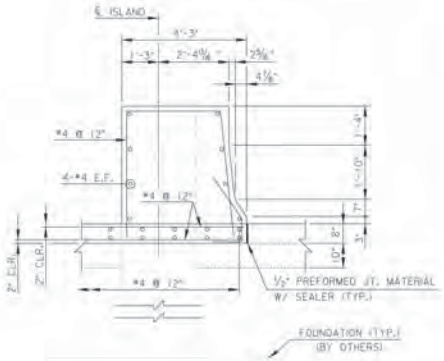
PLAN OF ISLAND 7
SCALE: ¾" = 1'-0"



SECTION C-C
SCALE: ½" = 1'-0"



SECTION A-A
SCALE: ½" = 1'-0"



SECTION B-B
SCALE: ½" = 1'-0"

3	3/27/07	REMOVED GATE
2	7/20/06	REVISED SHEET SIZE AND TITLE BLOCK
1	6/23/06	ADDED SHEET
		REVISIONS

STP-105

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

POWHITE PARKWAY EXPRESS TOLL LANES PROJECT

TOLL PLAZA
ISLAND 7 DETAILS

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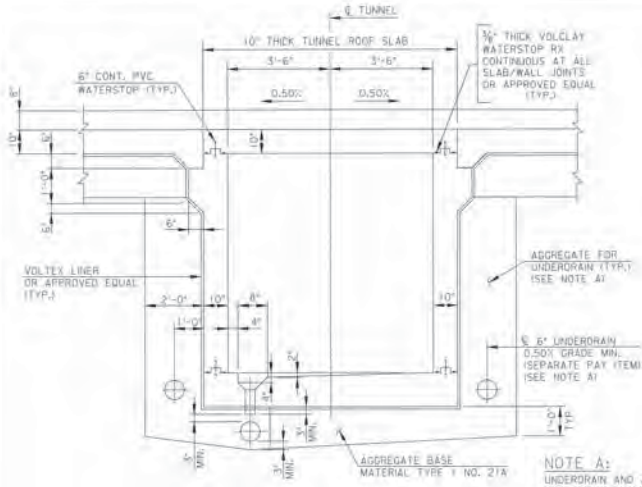
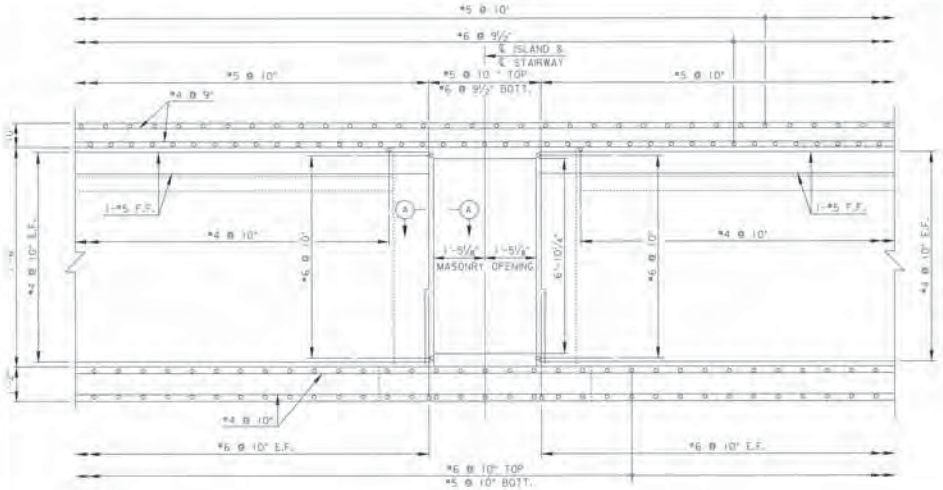
\105-toll island 7 details.dgn Mar. 29, 2007 12:53:31



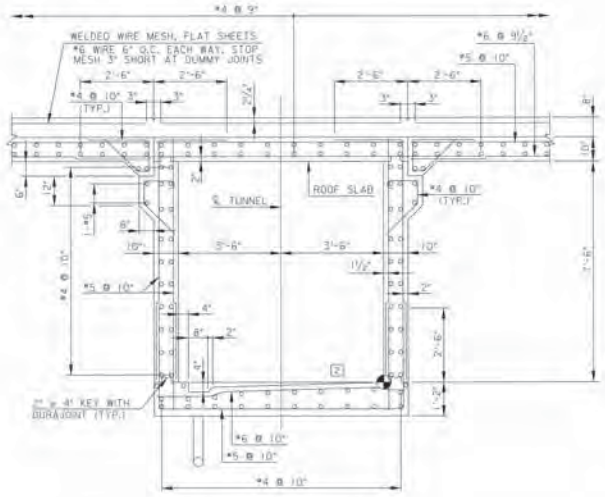
TYPICAL SECTION - BETWEEN ISLANDS
SCALE: ½" = 1'-0"

NOTE A:
UNDERDRAIN AND AGGREGATE FOR UNDERDRAIN SHALL BE PLACED AROUND THE OUTLINE OF THE STAIR WELLS. UNDERDRAIN SHALL BE SLOPED TO DRAIN.

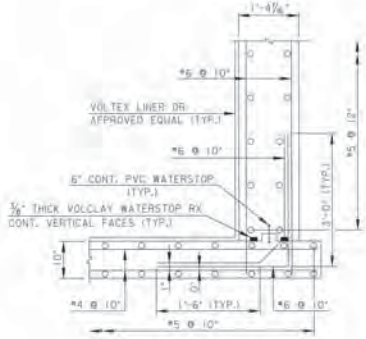


TUNNEL LONGITUDINAL SECTION AT STAIRWAY ENTRANCE
SCALE: ½" = 1'-0"

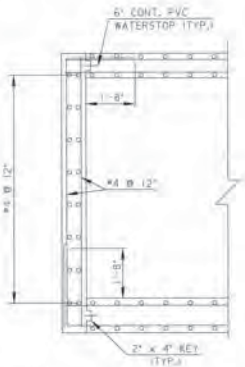
NOTE A:
MASONRY OPENING SHALL BE FIELD VERIFIED AT EXISTING POWHITE TOLL PLAZA WITH ENGINEER.



TUNNEL TYPICAL SECTION
SCALE: ½" = 1'-0"



SECTION A-A
SCALE: ¾" = 1'-0"



SECTION AT END OF TUNNEL
SCALE: ½" = 1'-0"

3	3/27/07: REMOVED AND UPDATED DETAILS
2	7/20/06: REVISED SHEET - SEE SHEET 18
1	6/23/06: ADDED SHEET
	REVISIONS

STP-106A

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM

POWHITE PARKWAY EXPRESS TOLL LANES PROJECT

TOLL PLAZA

MISCELLANEOUS TUNNEL DETAILS-1

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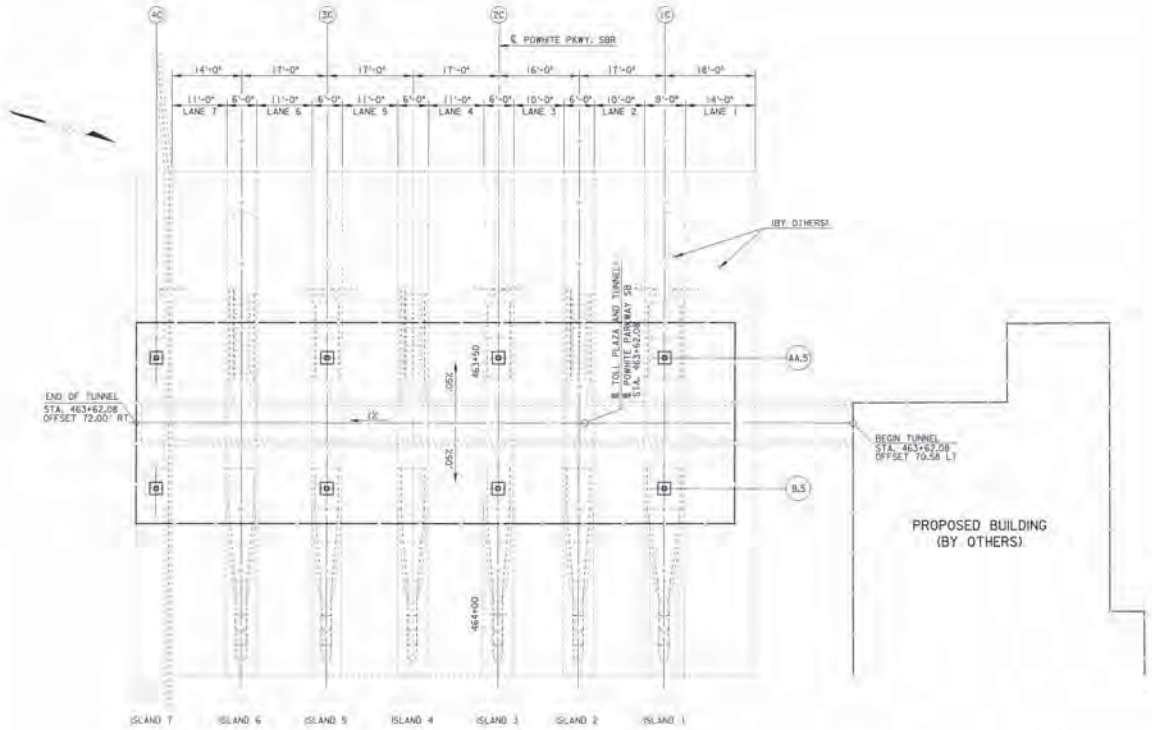
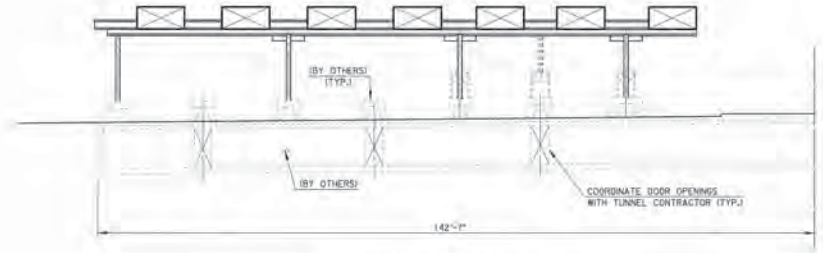


PLAN OF TOLL PLAZA
SCALE: 1" = 10'-0"



ELEVATION OF TOLL PLAZA
SCALE: 1" = 10'-0"

GENERAL NOTES:

SPECIFICATIONS:
CONSTRUCTION - VIRGINIA DEPARTMENT OF TRANSPORTATION, ROAD AND BRIDGE SPECIFICATIONS, 2002

DESIGN - 2002 (17TH EDITION) AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, WITH INTERIMS THROUGH 2004

DESIGN LOADS:
ROOF LIVE LOAD 20 PSF
WIND 40 PSF
FLAT ROOF SNOW LOAD 20 PSF

DESIGN STRENGTHS:

CONCRETE f'_c = 3000 PSI
REINF. STEEL FY= 60 KSI

STRUCTURAL STEEL
MATERIAL SPECIFICATIONS:

WIDE FLANGE SHAPES	ASTM A992
CHANNELS, ANGLES AND PLATES	ASTM A36
STRUCTURAL TUBING AND PIPE	ASTM A500, GRADE C
HIGH STRENGTH BOLTS	ASTM A325X
ANCHOR BOLTS	ASTM F1554, GRADE 55
HARDENED STEEL WASHERS	ASTM F436

ALL SHOP CONNECTIONS SHALL BE WELDED AND ALL FIELD CONNECTIONS SHALL BE BOLTED.

ALL STRUCTURAL STEEL SHALL BE HOT-DIP GALVANIZED PER ASTM A123, UNLESS OTHERWISE NOTED. ALL BOLTS, ANCHOR BOLTS, WASHERS AND NUTS SHALL BE HOT-DIP GALVANIZED PER ASTM A153. THE LOWER CANOPY FRAMING STEEL SHALL BE PAINTED, SEE SPECIAL PROVISIONS.

ALL METAL ROOF DECK SHALL BE 3", 22 GAGE, WIDE RIB TYPE B, GALVANIZED, WITH THE MINIMUM PROPERTIES DEFINED BY THE STEEL DECK INSTITUTE (SDI).

¾" DIAMETER BOLTS SHALL BE USED FOR THE CANOPY STRUCTURE AND ⅝" DIAMETER BOLTS FOR ROOF SCREEN STRUCTURES.

ALL SHOP AND FIELD WELDING SHALL BE PERFORMED BY QUALIFIED WELDERS IN ACCORDANCE WITH AWS D1.1-2002 USING E70XX ELECTRODES.

ALL HOLES REQUIRED IN STRUCTURAL STEEL MEMBERS FOR PIPING AND DUCTWORK SHALL BE SHOWN ON THE SHOP DRAWINGS AND BE MADE IN THE SHOP. NO HOLES SHALL BE CUT IN THE FIELD WITHOUT APPROVAL OF THE ARCHITECT/ENGINEER.

ALL BOLTED CONNECTIONS SHALL BE BEARING TYPE, NON SLIP-CRITICAL, TIGHTENED TO A "SNUG-TIGHT CONDITION" AS DEFINED BY AISC.

THE FRAME OF THE STEEL SKELETON SHALL BE CARRIED UP TRUE AND PLUMB AND TEMPORARY BOLTING AND BRACING SHALL BE INTRODUCED TO SAFELY CARRY ALL LOADS TO WHICH THE STRUCTURE MAY BE SUBJECTED, INCLUDING EQUIPMENT AND OPERATION OF SAME. INDIVIDUAL COLUMNS MUST BE BRACED BEFORE BEAM CONNECTIONS ARE MADE AND BRACING SHALL BE LEFT IN PLACE AS LONG AS MAY BE REQUIRED FOR SAFETY.

AFTER COMPLETION OF ERECTION, THE OWNER SHALL ENGAGE AN INDEPENDENT TESTING AGENCY TO INSPECT HIGH STRENGTH BOLTED CONNECTIONS, TO PERFORM TESTS, AND TO PREPARE TEST REPORTS. THE TESTING AGENCY SHALL CONDUCT AND INTERPRET TESTS AND STATE IN EACH REPORT WHETHER THE TEST RESULTS COMPLY WITH THE REQUIREMENTS AND SPECIFICALLY STATE ANY DEVIATIONS THERE FROM. THE TESTING SHALL CONFORM TO THE REQUIREMENTS FOUND IN THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 AND A490 BOLTS", DATED JUNE 2000, WITH SUPPLEMENTS. BOLTS THAT ARE NEITHER NON SLIP CRITICAL NOR SUBJECT TO DIRECT TENSION NEED NOT BE INSPECTED FOR BOLT TENSION OTHER THAN TO INSURE THAT THE PLIES OF THE CONNECTED ELEMENT HAVE BEEN BROUGHT INTO SNUG CONTACT. THE INDEPENDENT TESTING AGENCY SHALL SUBMIT THE INTENDED TEST PROCEDURES TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO BEGINNING TESTING.

FOUNDATIONS

FOUNDATIONS FOR THIS STRUCTURE AND SPREAD FOOTINGS BEARING ON EITHER FIRM VIRGIN SOIL OR COMPACTED STRUCTURAL FILL WITH AN ALLOWABLE BEARING CAPACITY OF 3000 PSF IN ACCORDANCE WITH THE OWNER'S GEOTECHNICAL ENGINEER'S REPORT BY FROEHLING & ROBERTSON, INC. DATED OCTOBER, 2005. THE OWNER'S GEOTECHNICAL ENGINEER SHALL VERIFY, PRIOR TO POURING, THAT THE SOIL IS CAPABLE OF SUSTAINING SUCH A LOAD.

PREPARATION OF SOIL AND SUBGRADE BENEATH FOOTINGS AND SLABS ON GRADE SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE OWNER'S GEOTECHNICAL ENGINEER'S REPORT AND THE PROJECT SPECIFICATIONS.

ALL BACKFILL BEHIND TUNNEL WALLS SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE OWNER'S GEOTECHNICAL ENGINEER'S REPORT AND THE PROJECT SPECIFICATIONS.

ALL WALLS SUBJECT TO LATERAL LOAD DUE TO UNBALANCED FILL SHALL BE BRACED PLUMB UNTIL BACKFILL HAS BEEN PLACED AND COMPACTED AND SHALL REMAIN BRACED UNTIL THE PERMANENT STRUCTURE ABOVE AND BELOW IS IN PLACE AND CAPABLE OF RESISTING ALL LOADS.

THE CONTRACTOR SHALL VERIFY ALL FIELD MEASUREMENTS, EXISTING DIMENSION, ELEVATIONS, AND THE SHAPES OF SIZES OF EXISTING STRUCTURAL MEMBERS SHOWN ON THE CONTRACT DRAWINGS PRIOR TO BEGINNING WORK. THE ARCHITECT/ENGINEER SHALL BE NOTIFIED IN WRITING OF ALL DISCREPANCIES THAT WOULD RESULT IN REVISIONS TO THE CONTRACT DRAWINGS.

THE CONTRACTOR SHALL VERIFY ALL DRAWINGS FOR COORDINATION BETWEEN TRADES. HE SHALL LOCATE SLOTS, SLEEVES AND TRENCHES AS REQUIRED FOR MECHANICAL TRADES AND PROVIDE AND INSTALL ANCHORS, INSERTS, HANGERS, ETC. AS REQUIRED FOR VARIOUS OTHER TRADES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND ERECTION OF ALL TEMPORARY BRACING, FORMWORK, SHEETING, SHORING AND UNDERPINNING NECESSARY TO PERFORM THE WORK.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR SAFETY PRECAUTIONS AND PROGRAMS AS THEY RELATE TO THE WORK OF THIS PROJECT.

THE CONTRACTOR SHALL SUBMIT THE REQUIRED SHOP DRAWINGS FOR REVIEW PRIOR TO BEGINNING WORK. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS AND ACCEPT FULL RESPONSIBILITY FOR DIMENSIONAL CORRECTNESS. UNDER NO CIRCUMSTANCES SHALL REPRODUCTIONS OF CONTRACT DRAWINGS BE USED AS SHOP DRAWINGS.

ALL STRUCTURAL STEEL SHOP DRAWINGS SHALL BE PREPARED UNDER THE DIRECT SUPERVISION OF PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF VIRGINIA.

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RICHMOND METROPOLITAN AUTHORITY
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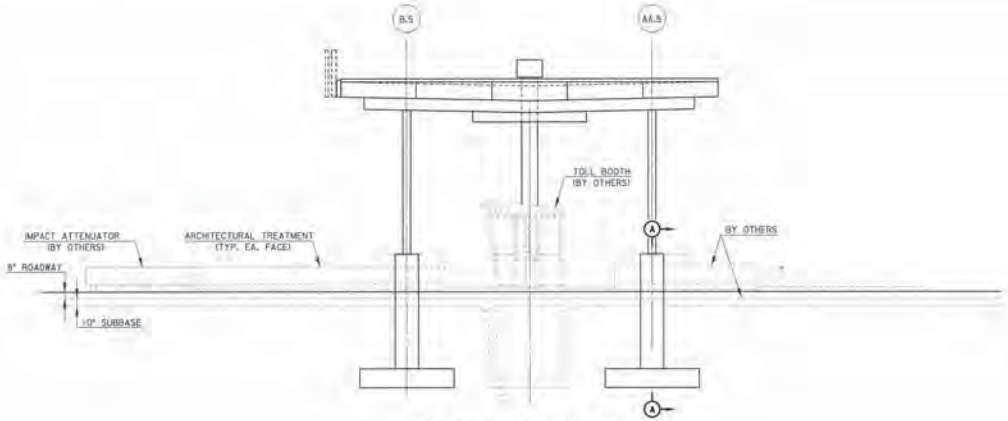
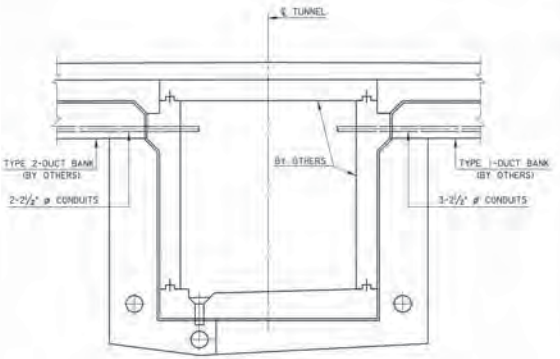
RICHMOND, VIRGINIA

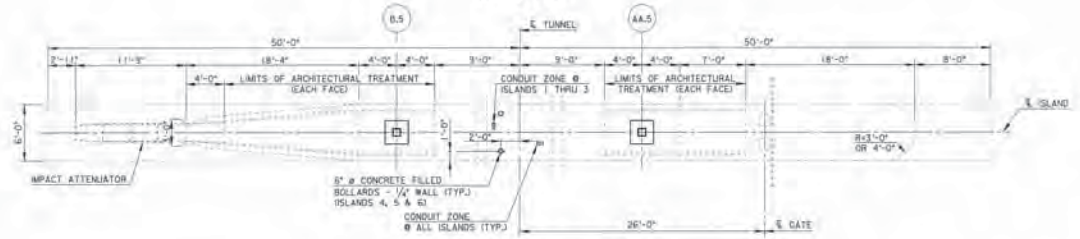
TOLL PLAZA
PLAN AND ELEVATION



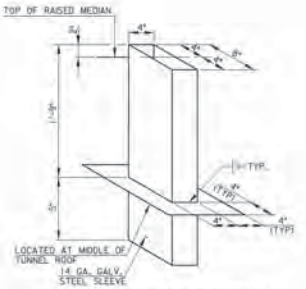
ELEVATION OF 6'-0" ISLAND
(ISLANDS 3 & 5)
(ISLAND 1 SIMILAR)
SCALE: 3/8" = 1'-0"



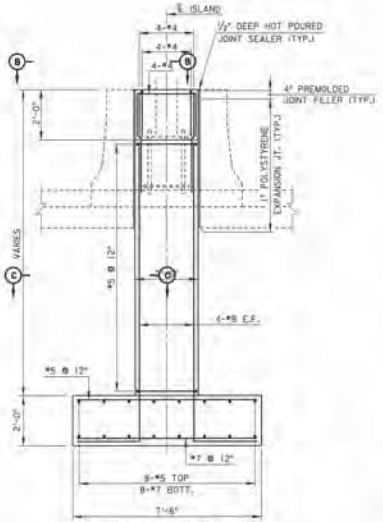
TYPICAL SECTION - BETWEEN ISLANDS
SCALE: ½" = 1'-0"



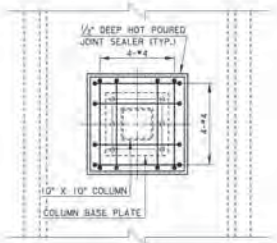
PLAN OF 6'-0" ISLAND
(ISLANDS 3 & 5)
(ISLAND 1 SIMILAR)
SCALE: 3/8" = 1'-0"



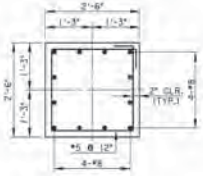
TUNNEL SLEEVE DETAIL
SCALE: 1½" = 1'-0"



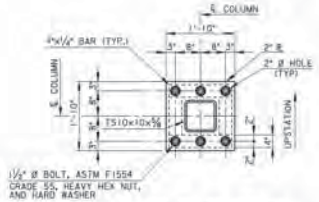
SECTION A-A
SCALE: ½" = 1'-0"



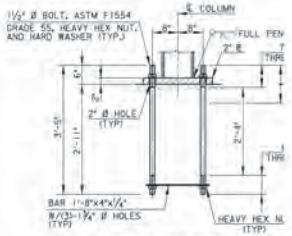
SECTION B-B
SCALE: ¾" = 1'-0"



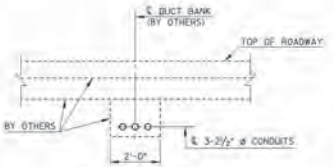
SECTION C-C
SCALE: ¾" = 1'-0"



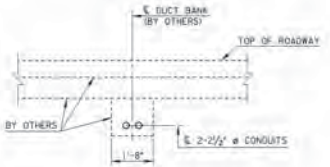
BASE PLATE DETAIL
SCALE: ¾" = 1'-0"



ANCHOR BOLT DETAIL
SCALE: ¾" = 1'-0"



TYPE 1



TYPE 2

TYPICAL DUCTBANK DETAILS
SCALE: ½" = 1'-0"

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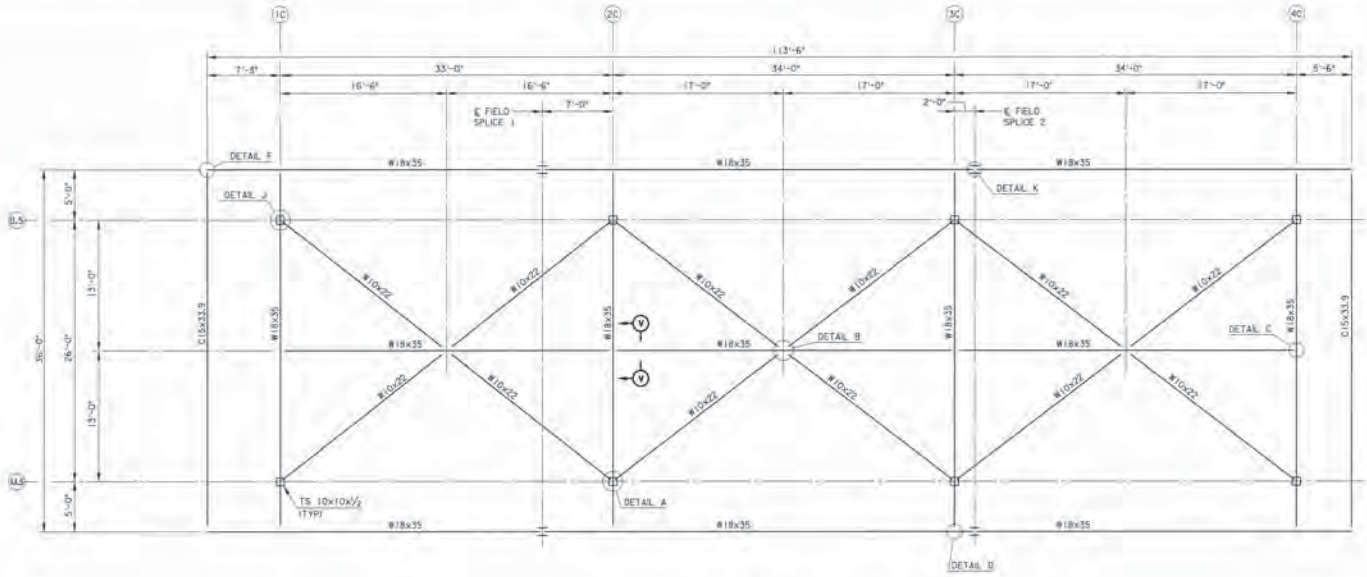
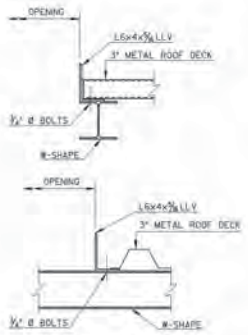
STRUCTURAL TOLL PLAZA
TYPICAL TOLL ISLAND DETAILS - 1
S10-104

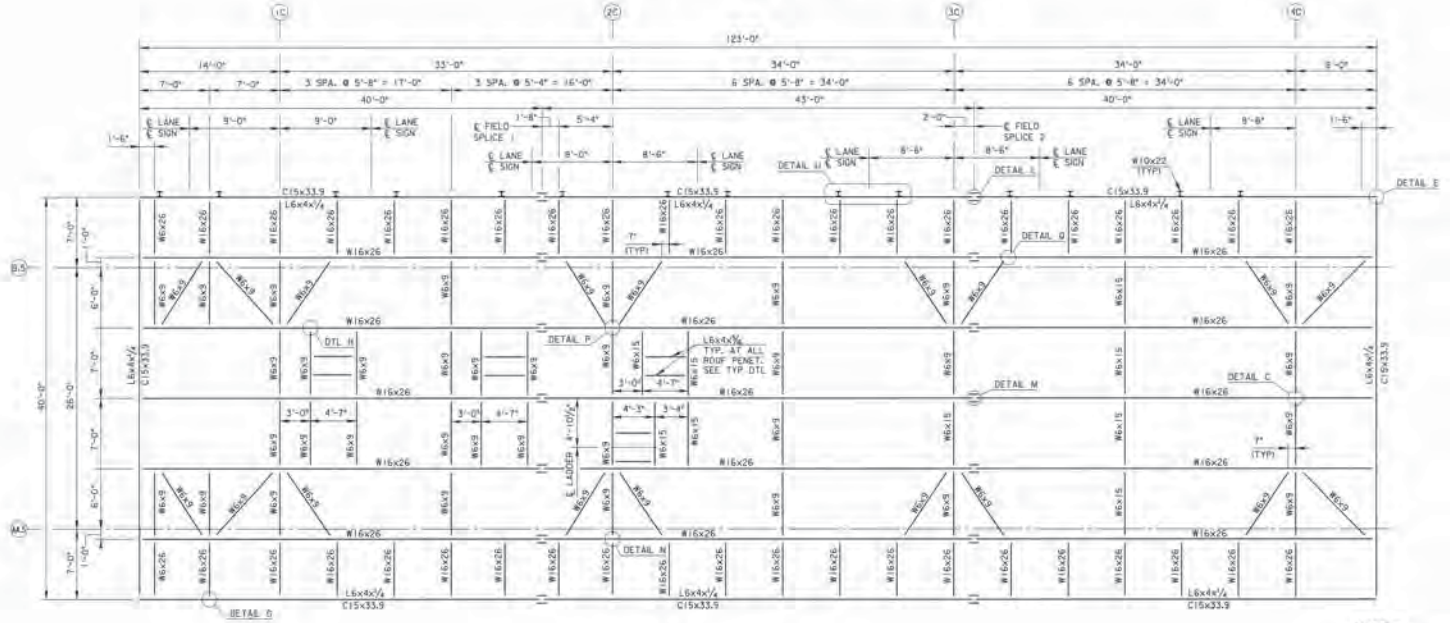


FRAMING PLAN - LOWER LEVEL
SCALE: 1" = 5'-0"



(4 - PENETRATIONS REQUIRED)

TYPICAL ROOF PENETRATION DETAILS
SCALE: 1½" = 1'-0"



FRAMING PLAN - UPPER LEVEL
SCALE: 1" = 5'-0"

NOTES:

1. FOR TYPICAL SECTION, SEE SHEET STP-108.
2. FOR GENERAL NOTES, SEE SHEET STP-101.
3. FOR FRAMING CONNECTION DETAILS, SEE SHEET STP-109 AND STP-110.
4. FOR ROOF SCREEN FRAMING PLAN AND DETAILS, SEE SHEET STP-111.
5. LOCATION OF W16x26 MAY BE ADJUSTED TO ACCOMODATE W10x22 SIGN BRACKET CONNECTION.
6. FOR SECTION Y-Y, SEE SHEET NO. STP-109.

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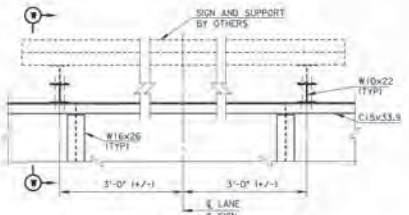
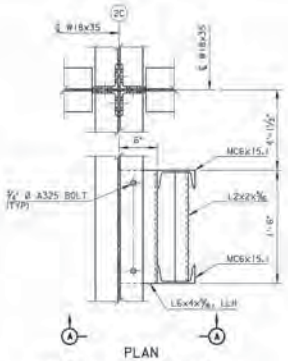
CANOPY FRAMING PLAN



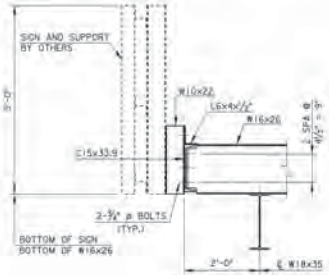
NOTE: LOCATION OF W16x26 MAY BE ADJUSTED TO ACCOMODATE W6x9 SIGN BRACKET CONNECTIONS.

DETAIL U
SCALE: 3/4" = 1'-0"

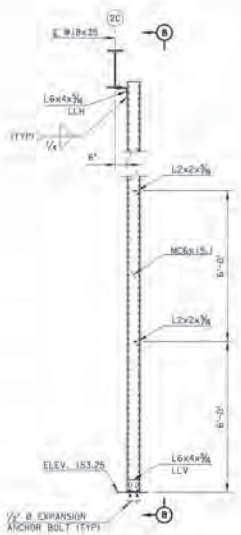


PLAN

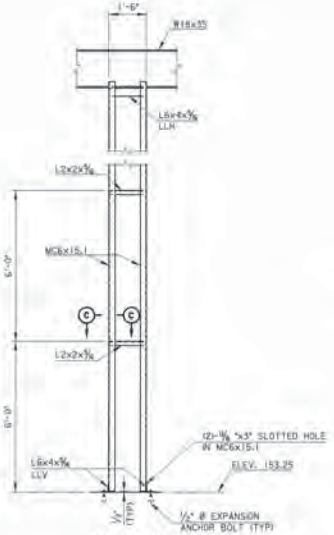
LADDER SUPPORT DETAIL
SCALE: 1 1/2" = 1'-0"



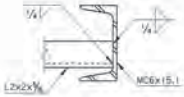
SECTION W-W
SCALE: 3/4" = 1'-0"



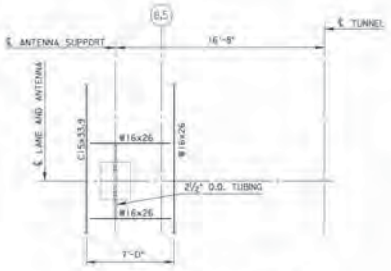
VIEW A-A
SCALE: 1/2" = 1'-0"



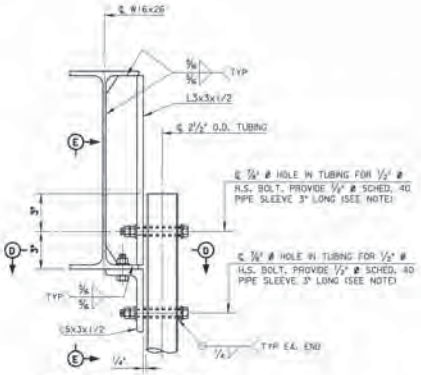
VIEW B-B
SCALE: 1/2" = 1'-0"



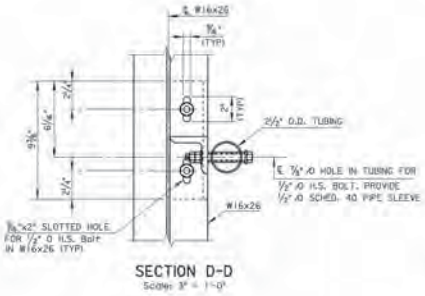
SECTION C-C
SCALE: 3" = 1'-0"



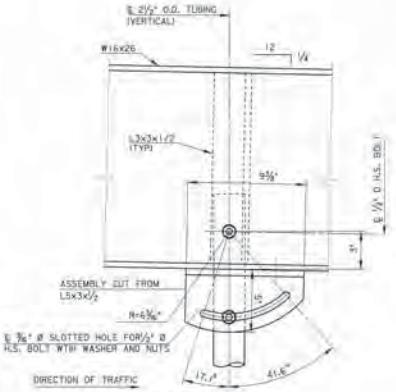
PARTIAL ANTENNA SUPPORT PLAN
SCALE: 1/4" = 1'-0"



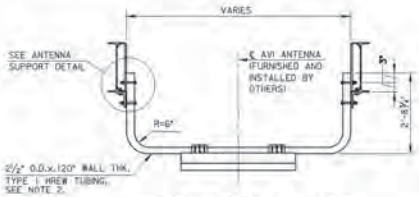
ANTENNA SUPPORT DETAIL
Scale: 3" = 1'-0"



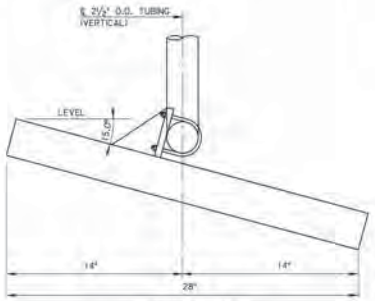
SECTION D-D
Scale: 3" = 1'-0"



SECTION E-E
SCALE: 3" = 1'-0"



TYPICAL ANTENNA SUPPORT
(LOOKING IN THE DIRECTION OF TRAFFIC)
SCALE: 3/4" = 1'-0"



ELEVATION
ANTENNA POSITION DETAIL
SCALE: 3" = 1'-0"

NOTES:

1. FOR INSTALLATION OF ELECTRICAL INFRASTRUCTURE AND EQUIPMENT SEE ELECTRICAL DRAWINGS.
2. ANTENNA SUPPORT BRACKETS SHALL BE FABRICATED FROM ASTM 513 TYPE I HOT-ROLLED ELECTRIC#ELDED (HREW) MECHANICAL TUBING.
3. STEEL MEMBERS AND PLATES FOR ANTENNA SUPPORT SHALL BE ASTM A709, GRADE 36 GALVANIZED TO ASTM-123.
4. THE C15x33.9 AND W16x26 MEMBERS ARE CANOPY STEEL.

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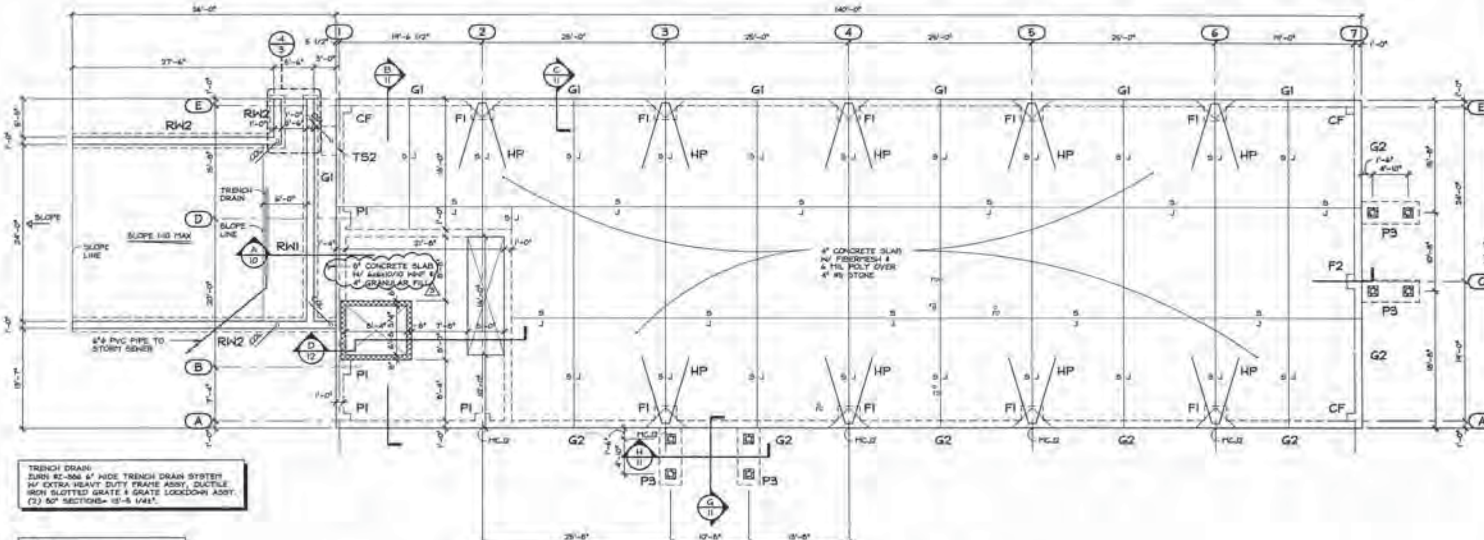
RICHMOND, VIRGINIA

CANOPY DETAILS

STRUCTURAL NOTES:

1. CONCRETE: F'c = 3500psi SLABS, F'c = 3000psi FOOTINGS AND WALLS.
2. RE-STEEL: Fy = 60 KSI.
3. ANCHOR BOLTS SHALL BE ASTM A36 STEEL.
4. ALL RE-STEEL SHALL BE LAPPED A MIN. OF 36 BAR DIA'S (UNLESS NOTED OTHERWISE).
5. ALL REINFORCING STEEL UTILIZED IN THE MASONRY WALLS SHALL BE #4 RODS FURNISHED IN 5'-4" LENGHTS FOR THE FULL HEIGHT OF THE WALLS. RODS EMBEDDED IN FOOTINGS SHALL BE HOOKED.
6. ACCURATELY POSITION, SUPPORT, & SECURE IN PLACE ALL STEEL REINFORCING & WIRE FABRIC USING CHAIRS, BOLSTERS, BAR SUPPORTS, & SPACERS SIZED AND SHAPED FOR ADEQUATE SUPPORT OF REINFORCING DURING CONCRETE PLACEMENT.

   MIN COVERAGE @ FOOTINGS: 3"
   MIN COVERAGE @ SLABS / WALLS: 1 1/2"
7. SOIL BEARING CAPACITY: 2000 PSF NET (ASSUMED).
8. CURING COMPOUND AND SEALER SHALL BE (BASF BUILDING PRODUCTS) SONNEBORN KURE-N-SEAL. CURING COMPOUND SHALL BE APPLIED IMMEDIATELY FOLLOWING CONCRETE FINISHING, AND IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN SPECIFICATIONS.
9. GRANULAR FILL: #57 OR #5 (AS NOTED) STONE THICKNESS: 4"
10. VAPOR BARRIER: 1 LAYER 6 MIL POLY.
11. SLAB REINFORCING: 6 x 6 x 10/10 WWM & FIBERMESH (BASEMENT), FIBERMESH (1st FLOOR)
12. ALL CONCRETE JOINTS SHALL BE FILLED WITH A NO-TRACK FILLER.
13. & REFER TO THE METAL BUILDING MANUFACTURERS ANCHOR BOLT PLAN FOR QUANTITY, SIZE, AND LOCATION OF ALL ANCHOR BOLTS. ***VERY IMPORTANT***
14. ALL MASONRY PIERS SHALL BE FULLY BONDED.
15. ALL MASONRY WALLS SHALL BE FULLY BONDED AT INTERSECTIONS.
16. ALL MASONRY CORES WITH RODS SHALL BE FILLED WITH CONCRETE.
17. ALL MASONRY WALLS SHALL HAVE DUR-O-WAL HORZ TRUSS REINFORCING @ 24" ABOVE GRADE & 16" BELOW GRADE.
18. ALL MASONRY BELOW GRADE & OTHER INTERIOR MASONRY SHALL BE STANDARD UNITS, ASTM C 90, TYPE I, NORMAL WEIGHT, NOMINAL 8"x16"x8" UNLESS NOTED OTHERWISE ON THE DRAWINGS.
19. MORTAR SHALL BE IN ACCORDANCE WITH ASTM C 270, TYPE M FOR BELOW GRADE APPLICATIONS, AND TYPE S FOR ALL OTHER MASONRY.
20. STRIKE EXPOSED JOINTS FOR MASONRY CONCAVE. STRIKE ALL UNEXPOSED JOINTS FLUSH.
21. ALL MASONRY WALLS SHALL HAVE EXPANSION JOINTS AT A MAXIMUM 25' (12' FROM (MASONRY) BUILDING CORNERS) OR CLOSER IF SO INDICATED ON THE DRAWINGS. ALL JOINTS SHALL CONTAIN A FIBER EXPANSION MATERIAL AND SHALL BE CAULKED WITH A TWO PART POLYSULFIDE CAULKING. ALL JOINTS IN FIRE WALLS SHALL BE CAULKED WITH A FIRE CAULKING. SEE EXTERIOR ELEVATIONS FOR LOCATIONS OF MASONRY EXPANSION JOINTS (MCJ'S). MCJ SHALL EXTEND FULL HEIGHT OF MASONRY.
22. ALL EXPOSED EXTERIOR PRE-COLORED OR UNFINISHED MASONRY SHALL BE SEALED WITH TWO COATS OF ENVIROSEAL DOUBLE 7 BLOCK SEALANT AS MANUFACTURED BY HARRIS SPECIALTY CHEMICALS, INC., OR AN APPROVED EQUAL.
23. ALL WALLS PENETRATING THE FLOOR SLAB SHALL HAVE A 1/2" EXPANSION JOINT (E.J.) AT THE FLOOR LINE.
24. EXPANSION JOINT MATERIAL AT WALLS TO SLAB SHALL BE 1/2" ASPHALT IMPREGNATED FIBERBOARD.
25. ALL CONCRETE WALLS ABOVE GRADE SHALL BE PLUGGED AND RUBBED.
26. PROVIDE SHORING ADEQUATE TO PREVENT DAMAGE OR MOVEMENT OF THE RETAINING WALLS PRIOR TO BACK FILLING. RETAINING WALLS SHALL BE EVENLY BACK FILLED ON BOTH SIDES OF THE WALL TO THE LOW SIDE GRADE LINE BEFORE BACK FILLING ABOVE THE LOW GRADE LINE. ALL BACK FILL SHALL BE COMPACTED WHEN PLACED AND PRIOR TO PLACING ANOTHER LIFT, TO 95% OPTIMUM DENSITY BASED ON STANDARD PROCTOR.
27. ALL BASEMENT WALLS SHALL BE BACKFILLED ENTIRELY W/ #57 STONE.
28. PROVIDE PERIMETER INSULATION ALONG ALL EXTERIOR WALLS (1" RIGID).
29. THE BOTTOM OF ALL FOOTINGS SHALL BE A MINIMUM OF 18" BELOW FINISHED GRADE.
30. ALL CONCRETE WORK SHALL BE PERFORMED IN ACCORDANCE WITH ACI 318, LATEST EDITION.
31. ALL FOOTINGS SHALL BEAR ON ORIGINAL EARTH, FILL COMPACTED TO 95% PROCTOR OR FLOWABLE FILL.



TRENCH DRAIN:
ZURN Z-886 6" WIDE TRENCH DRAIN SYSTEM W/ EXTRA HEAVY DUTY FRAME ASSY, DUCTILE IRON SLOTTED GRATE & GRATE LOCKDOWN ASSY. (2) 80" SECTIONS= 13'-5 1/4".

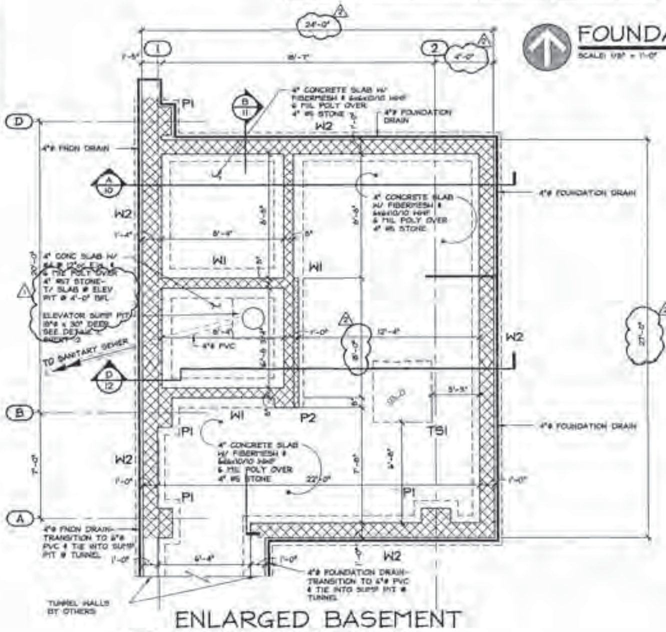
NOTES-
FOR RODS @ MASONRY JAMBS, SEE FLOOR PLAN FOR DOOR LOCATIONS.

MASONRY FINISH AS CALLED FOR ON THE ELEVATIONS SHALL EXTEND 1 COURSE BELOW GRADE.

PROVIDE POSITIVE SLOPE FOR DRAINAGE @ ALL EXTERIOR CONCRETE SLABS. SEE ALSO SITE PLANS.

FOR CONCRETE SLAB ELEV'S. SEE FLOOR PLAN.

FOUNDATION PLAN
SCALE: 1/8" = 1'-0"



ENLARGED BASEMENT FOUNDATION PLAN
SCALE: 1/4" = 1'-0"

FOOTING SCHEDULE

MARK	DIMENSION SIZE L	DIMENSION SIZE W	DIMENSION SIZE D	PIER pier/wall H	PIER b/B	X	Y	STEEL M	STEEL N	STEEL O	STEEL P	HAIRPIN (HP) #	HAIRPIN (HP) Q	HAIRPIN (HP) R	ANCHOR BOLT (AB) QTY	ANCHOR BOLT (AB) #	ANCHOR BOLT (AB) L
CF	2-0	2-0	2-0					3 #4	3 #4						SEE	NOTE	#13
F1	3-0	3-0	2-0					4 #4	4 #4			4	1-0	4-0	SEE	NOTE	#13
F2	2-0	2-0	2-0					3 #4	3 #4						SEE	NOTE	#13
G1		1-0	2-0						2 #4						SEE	NOTE	#13
G2		1-0	2-0						2 #4	#4 @ 48"							
P1	3-0	3-0	1-0	VAR.	VAR.	2-0	2-0	4 #4	4 #4	4 #4					SEE	NOTE	#13
P2	2-0	2-0	1-0	13-0	4-0	1-4	1-4		4 #4	4 #4					2	1/2"	1-4
P3	3-0	8-0	1-0	5-4		1-4	1-4	#4 @ 12"	#4 @ 12"						4	3/4"	1-0
RW1	SEE DETAIL																
RW2	SEE DETAIL																
TS1	4-0	4-0	1-0		4"			5 #4	5 #4						4	3/4"	1-0
TS2	4-0	2-0	1-6		4"			#4 @ 12"	#4 @ 12"						4	3/4"	1-6
W1		2-0	1-0						2 #4	#4 @ 12"							
W2		3-0	1-0						2 #4	#4 @ 12"							

NOTE: G2, P1, P2, RW1, EXTEND RE-STEEL THRU COLUMN FOOTINGS.

DO NOT SCALE DRAWING FOR DIMENSIONS

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REVISION:

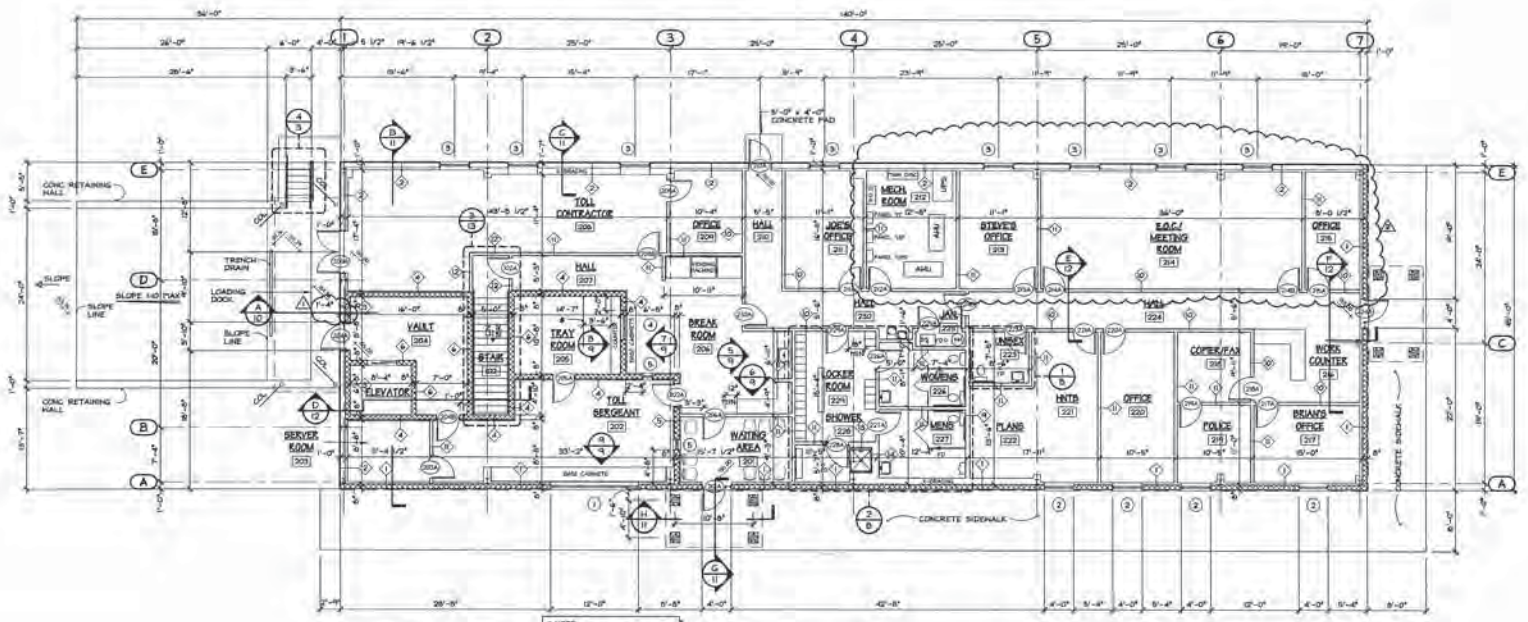
NO.	DATE:	DESCRIPTION:
-	10.11.06	ISSUED FOR CONSTRUCTION
1	10.24.06	ELEVATOR SUMP
2	11.07.06	REVISED/ADDED DIMENSIONS
3	12.08.06	REV. DOCK SLAB THICKNESS

PROPOSED BUILDING FOR:
RICHMOND METROPOLITAN AUTORITY
6234 POWHITE PARKWAY, CITY of RICHMOND, VIRGINIA

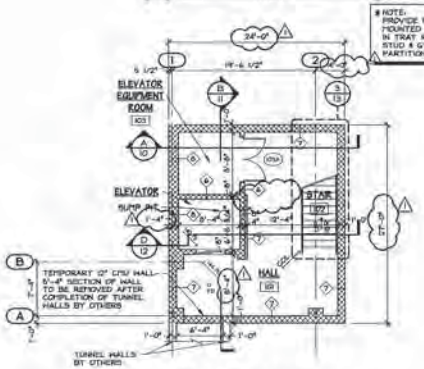
FOUNDATION PLAN

DRAWN BY: RANDY HOOKE — CHECKED BY: RFN
SCALE: 1/8" = 1'-0" — DATE: OCTOBER 5, 2006 — PROJECT NO. 06507

DRAWING NO:
2 of 16



FLOOR PLAN
SCALE: 1/8" = 1'-0"



BASEMENT FLOOR PLAN
SCALE: 1/8" = 1'-0"

NOTE: PROVIDE FLOOR / WALL MOUNTED TOILET PARTITION IN TRAT ROOM OR METAL STUD & GYPSUM BOARD PARTITION- LENGTH= 7'

WALL LEGEND

1. 8" SPLIT FACE CMU WALL TO 3'-4" AFF- METAL BUILDING WALL BEGINS AT 3'-4" AFF- W/ INTERIOR 4" x 20ga STEEL STUD WALL W/ 3 1/2" R-11 FG BATT INSUL W/ VAPOR BARRIER & 5/8" GYPSUM BOARD. PROVIDE VINYL BACKED R-19 FG INSULATION FROM TOP OF STUD WALL TO TOP OF METAL BUILDING WALL.
2. METAL BUILDING WALL W/ INTERIOR 4" x 20ga STEEL STUD WALL W/ 3 1/2" R-11 FG BATT INSUL W/ VAPOR BARRIER & 5/8" GYPSUM BOARD. PROVIDE VINYL BACKED R-19 FG INSULATION FROM TOP OF STUD WALL TO TOP OF METAL BUILDING WALL.
3. METAL BUILDING WALL W/ INTERIOR 8" CMU WALL.
4. 8" CMU WALL W/ 1 1/2" x 20ga HAT CHANNELS @ 16" GYPSUM BOARD.
5. 8" CMU WALL W/ 1 1/2" x 20ga HAT CHANNELS @ 16" GYPSUM BOARD EACH FACE.
6. 8" CMU WALL.
7. 12" CMU WALL.
8. 16" CMU WALL.
9. 6" x 20ga METAL STUDS @ 24oc W/ 5/8" GYPSUM BOARD EACH FACE.
10. 1 HOUR RATED WALL ASSEMBLY - UL DESIGN #U419 4" x 20ga METAL STUDS @ 24oc W/ 3 1/2" FG SOUND BATTS & 5/8" FIRE RATED GYPSUM BOARD EACH FACE.
11. 4" x 20ga METAL STUDS @ 24oc W/ 3 1/2" FG SOUND BATTS & 5/8" GYPSUM BOARD EACH FACE.
12. 6" x 20ga METAL STUDS @ 24oc W/ 3 1/2" R-13 FG BATT INSULATION W/ VAPOR BARRIER & 5/8" EXTERIOR GRADE GYPSUM BOARD ON INTERIOR FACE OF STAIRWELL & 5/8" GYPSUM BOARD ON TOLL CONTRACTOR & HALL FACE OF WALL.
13. 6" x 20ga METAL STUDS @ 24oc W/ 3 1/2" FG SOUND BATTS & 5/8" GYPSUM BOARD EACH FACE.
14. 11 0'3" CHASE WALL- 3 1/4" AIR SPACE BETWEEN 4" x 20ga STEEL STUD WALLS W/ 5/8" GYPSUM BOARD.

NOTE: PROVIDE MOISTURE RESISTANT GYPSUM BOARD IN ALL TOILET ROOMS, SHOWER & STAIR.

DO NOT SCALE DRAWING FOR DIMENSIONS

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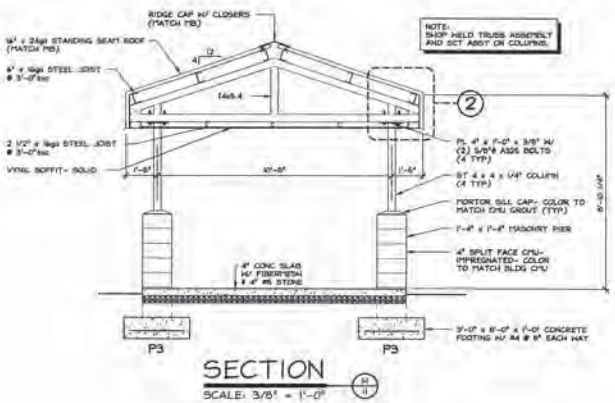
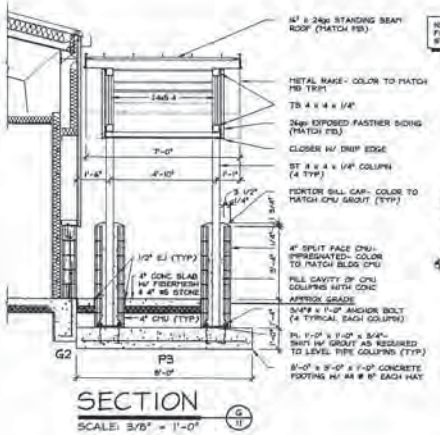
REVISION: NO.	DATE:	DESCRIPTION:
-	10.11.06	ISSUED FOR CONSTRUCTION
1	11.07.06	REVISED/ADDED DIMENSIONS
2	11.27.06	MOVED WALLS & WINDOWS

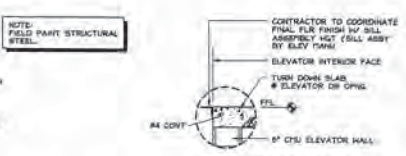
PROPOSED BUILDING FOR:
RICHMOND METROPOLITAN AUTORITY
6234 FOWLITE PARKWAY · CITY of RICHMOND · VIRGINIA
FLOOR PLAN

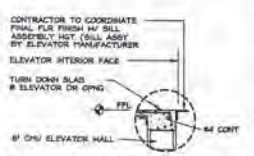
DRAWN BY: RANDY HOOKER | CHECKED BY: EJC
SCALE: 1/8" = 1'-0" | DATE: OCTOBER 5, 2006 | PROJECT NO: 06057

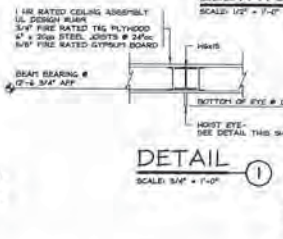
DRAWING NO:
4 of 16

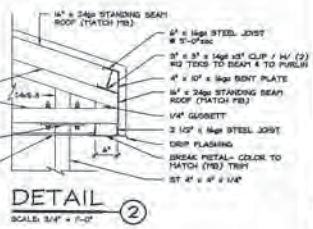


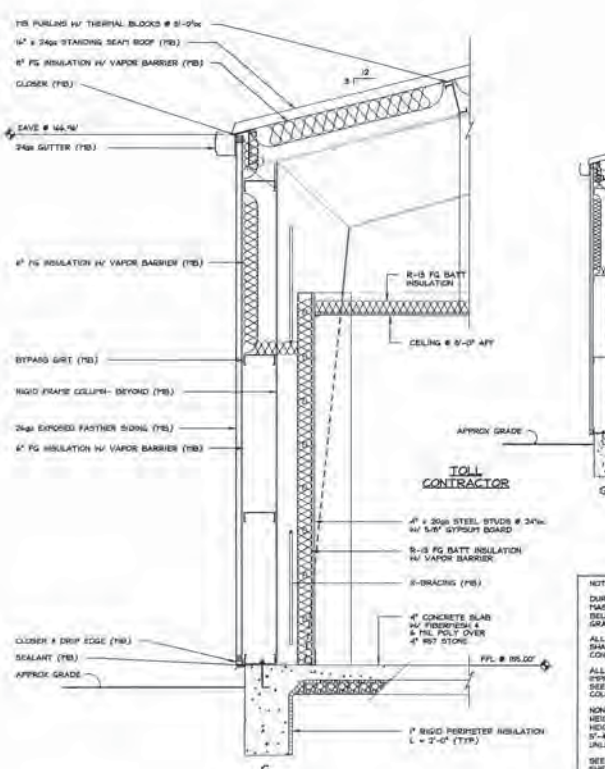


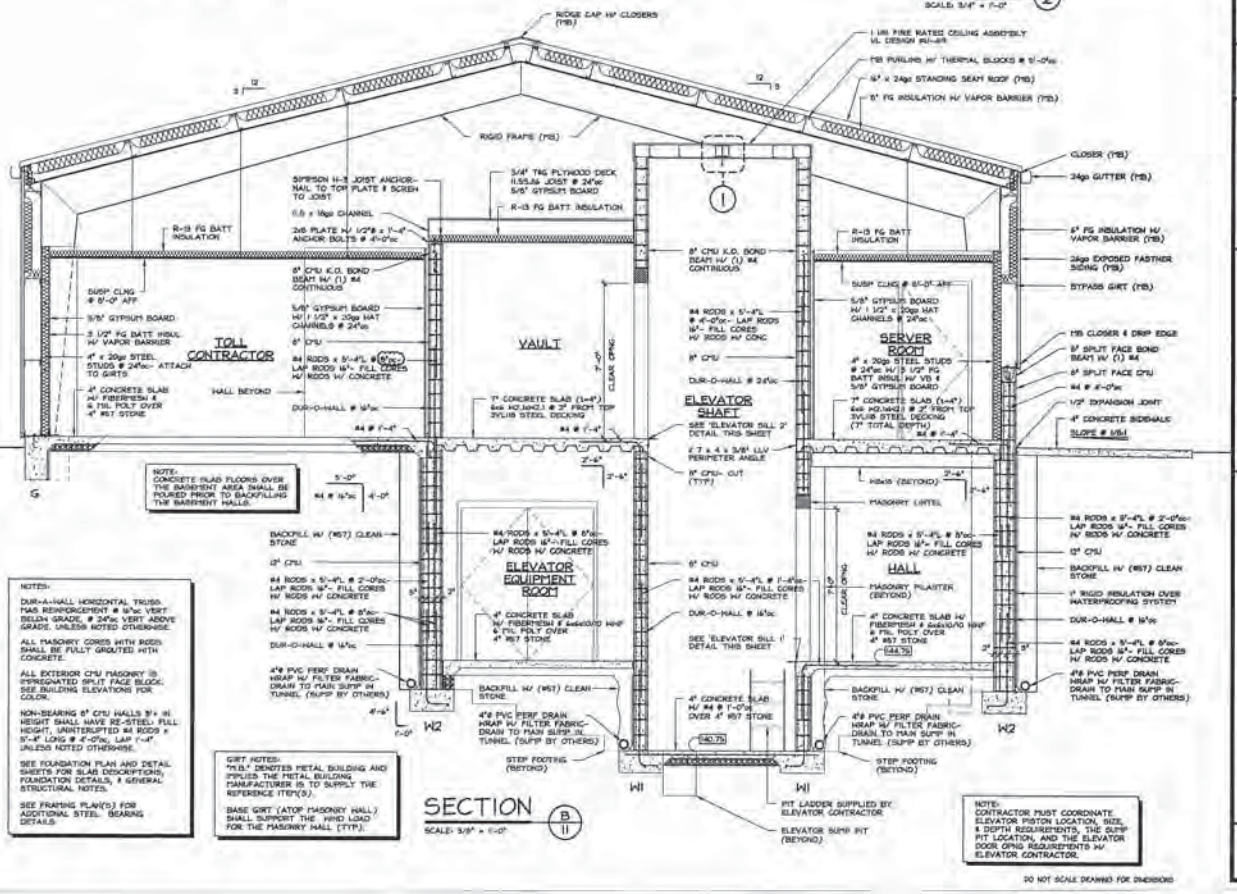












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REVISION:		
NO.	DATE:	DESCRIPTION:
	12/19/06	ISSUED FOR CONSTRUCTION

PROPOSED BUILDING FOR:
RICHMOND METROPOLITAN AUTORITY
6254 FOWLES PARKWAY , CITY of RICHMOND , VIRGINIA
BUILDING SECTIONS
DRAWN BY: RANDY HOOKER CHECKED BY: EPH PROJECT NO. 06007
SCALE: 3/4" = 1'-0" DATE: December 15, 2006

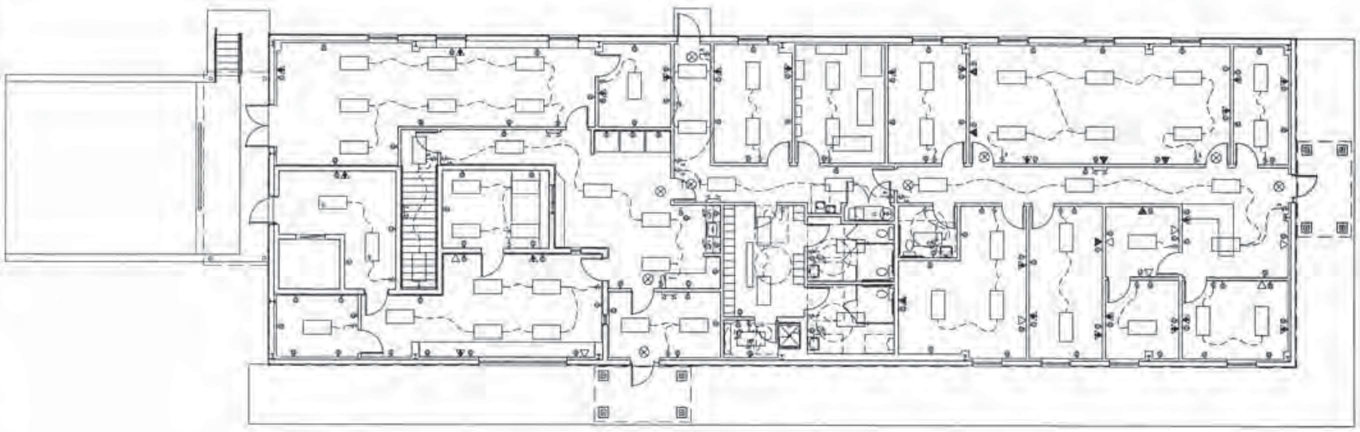
DRAWING NO: 11 of 16

ELECTRICAL SCHEDULE

MARK	DESCRIPTION
↑⊗↑	EXIT LIGHT W/ DIRECTIONAL ARROW OPTION & BATTERY PACK
E-E	EMERGENCY EGRESS LIGHT W/ BATTERY PACK
▭	2x4 LAY-IN FLUORESCENT 120V, W/ (4) 40 WATT TUBES W/ PRISMATIC LENS
▭	2x4 SURFACE MTD FLUORESCENT 120V, W/ (4) 40 WATT TUBES W/ PRISMATIC LENS
\$	SINGLE POLE SWITCH
$\$^3$	THREE-WAY SWITCH
⏀	DUPLEX OUTLET, 120 VOLT
⏀ GFI	DUPLEX OUTLET, 120 VOLT W/ GROUND FAULT INTERUPT (GFI)
▽	TELE OUTLET, PROVIDE BOX AND PULL STRING
▼	DATA LINK OUTLET, PROVIDE BOX AND PULL STRING
▼	TELE / DATA LINK OUTLET, PROVIDE BOX AND PULL STRING
(WH)	ELECTRICAL WATER HEATER, 120V / 2000W ENERGY EFFICIENT TYPE
▭▭	WATER COOLER, ADA COMPLIANT, BI-LEVEL, 120 VOLT

ELECTRICAL NOTES

1. THE ELECTRICAL WORK SHALL BE PER THE NATIONAL ELECTRICAL CODE AND ALSO CONFORM TO THE REQUIREMENTS OF THE LOCAL POWER COMPANY AND THE CITY OF RICHMOND, VIRGINIA.
2. THE ELECTRICAL CONTRACTOR SHALL DETERMINE THE ELECTRICAL SERVICE REQUIREMENTS AND VERIFY THE VOLTAGE AVAILABLE FOR THE ELECTRICAL SERVICE.
3. ALL MECHANICAL AND ELECTRICAL EQUIPMENT SHALL BE U.L. APPROVED
4. THE ELECTRICAL CONTRACTOR SHALL FURNISH ANY AND ALL ACCESSORY MATERIAL AND LABOR AS REQUIRED TO INSURE THE PROPER OPERATION AND CODE COMPLIANCE OF ALL MECHANICAL AND ELECTRICAL EQUIPMENT.
5. THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL POWER WIRING AND ASSOCIATED ITEMS (SWITCHES, STARTERS, FUSES, BREAKERS, PANEL BOXES, CUT-OFFS FOR THE PROPOSED MECHANICAL EQUIPMENT, I.E., HEATING, AIR CONDITIONING, FANS, LOUVERS, ETC. WHICH WILL BE SUPPLIED BY THE MECHANICAL CONTRACTOR. THE MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL LOW VOLTAGE CONTROL WIRING.
6. CONTRACTOR SHALL VERIFY EXACT LOCATION AND RATING OF EQUIPMENT TO BE INSTALLED AND ACCOMMODATE ELECTRICAL INTERFACES AS RECOMMENDED BY THE MANUFACTURER.
7. ALL WIRING SHALL HAVE COPPER CONDUCTORS. WIRE INSULATION RATING SHALL MATCH OR EXCEED EQUIPMENT RATING.
8. WHERE PERMITTED BY CODE AND AUTHORITY HAVING JURISDICTION, TYPE MC CABLE MAY BE USED.
9. DO NOT MIX RECEPTACLE CIRCUITS WITH LIGHTING CIRCUITS.
10. LABEL CIRCUITS ON PANELS AND JUNCTION BOX COVERS USING EMBOSSED OR PRINTED SELF-ADHESIVE TAPE.
11. PROVIDE FOR ANY ADDITIONAL EGRESS / EXIT LIGHTING AS REQUIRED BY THE FIRE MARSHALL'S OFFICE.
12. THE ELECTRICAL CONTRACTOR SHALL ROUGH-IN TELEPHONE / DATA COMMUNICATION BOXES WITH 3/4"ø CONDUIT AND SHALL EXTEND EMPTY CONDUIT 4" ABOVE THE CEILING. THE OWNER SHALL BE RESPONSIBLE FOR THE INSTALLATION OF THE PHONE / DATA COMMUNICATIONS SYSTEM.
13. ALL EGRESS LIGHTING (INCLUDING BATTERY PACKS) & EXTERIOR WALL PACK FIXTURES SHALL HAVE A 5-YR. (MIN.) WARRANTY.
14. PANEL BOXES, DISCONNECTS, ETC. SHALL BE SQUARE D OR G.E. BRAND OR EQUAL AS APPROVED BY ENGINEER.
15. ALL WIRING SHALL BE CONCEALED WHERE POSSIBLE.
16. ELECTRICAL OUTLETS IN THE TOILETS AND @ BREAK RM SINK COUNTER SHALL BE GFI DUPLEX OUTLETS. MOUNT OUTLETS ABOVE THE LAVATORIES / COUNTERS.
17. OWNER SHALL PAY ANY POWER COMPANY CHARGES FOR PERMANENT POWER.
18. CONTRACTOR TO MAKE ALL ARRANGEMENTS FOR ELECTRICAL SERVICE TO INCLUDE LOAD LETTER.
19. COORDINATE ALL WORK WITH THE MECHANICAL CONTRACTOR AND OTHER TRADES AS APPROPRIATE.



FIRST FLOOR
ELECTRICAL LAYOUT PLAN
SCALE: 1/8" = 1'-0"

BASEMENT
ELECTRICAL LAYOUT PLAN
SCALE: 1/8" = 1'-0"

DO NOT SCALE DRAWING FOR DIMENSIONS

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PHONE: 804-580-2227
FAX: 804-580-3334

REVISION:

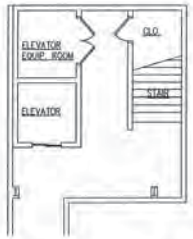
NO.	DATE:	DESCRIPTION:
	12/11/06	ISSUED FOR CONSTRUCTION

PROPOSED BUILDING FOR:
RICHMOND METROPOLITAN AUTORITY
6254 POWHITE PARKWAY . CITY of RICHMOND . VIRGINIA

ELECTRICAL LAYOUT PLAN

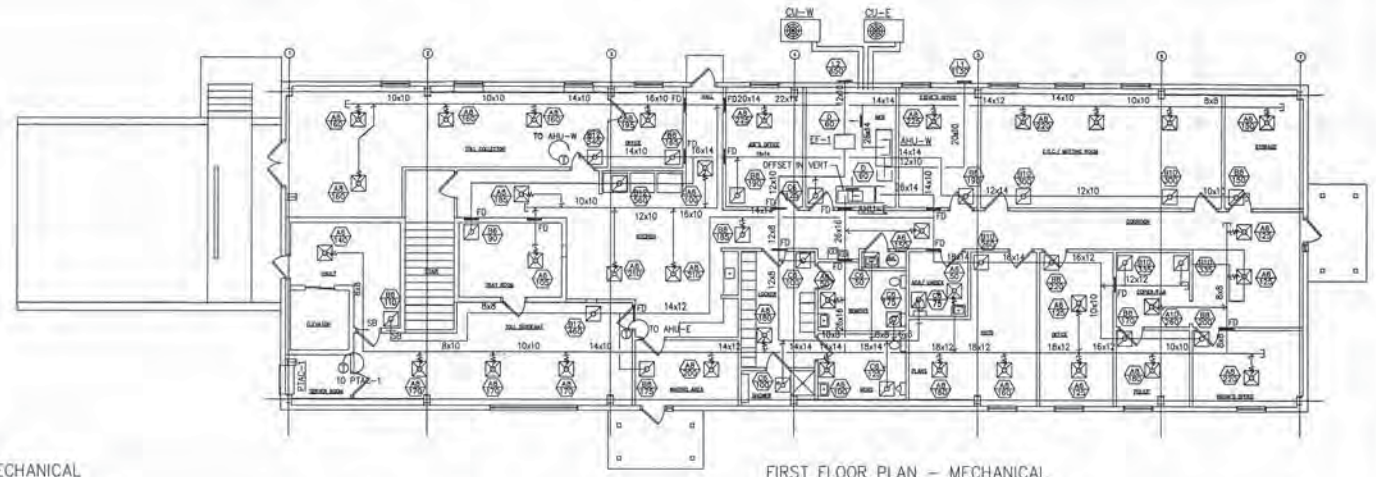
DRAWN BY: RANDY HOOKER CHECKED BY: LTC
SCALE: 1/8" = 1'-0" DATE: December 11, 2006 PROJECT NO: 06507

DRAWING NO.
15 of 16



BASEMENT FLOOR PLAN – MECHANICAL

SCALE: 1/8" = 1'-0"



FIRST FLOOR PLAN – MECHANICAL

SCALE: 1/8" = 1'-0"

SPLIT SYSTEM AIR COOLED HEAT PUMP SCHEDULE

UNIT NUMBER	LOCATION AND AREAS SERVED	INDOOR UNIT: FAN DATA: CFM	OA	EXTERNAL S.P. IN. H2O	TOTAL S.P. IN. H2O	MOTOR DATA: HP	RPM	V	PH	HZ	DX COOLING COIL DATA: NO. ROWS	FPI	NO. CKTS.	FACE AREA S. F.	EAT °F DB / LAT °F WB	SENS. MBH	TOTAL MBH	HEATING COIL DATA: CFM	EAT °F / LAT °F	CAPACITY MBH	ELECTRIC COIL DATA: V	PH	HZ	KW	SELECTION BASED ON: MANUFACTURER	MODEL NUMBER	OUTDOOR CONDENSING UNIT: UNIT NUMBER	COMPRESSOR DATA: NO.	INPUT KW EA.	V	PH	HZ	CONDENSER FAN DATA: HP	CFM	V	PH	HZ	SELECTION BASED ON: MANUFACTURER	MODEL NUMBER	REMARKS
AHU-E	EAST OFFICES	2915	550	0.75	2.00	2	1725	230	3	60	4	12	1	11.2	81 / 67	75.8	99.2	2915	59 / 78	81.5	230	3	60	35	AM STD	TWE120A3	CU-E	1	9.84	230	3	60	1	8200	230	1	60	AM STD	TWA120A3	
AHU-W	WEST OFFICES	2965	450	0.75	2.00	2	1725	230	3	60	4	12	1	11.2	80 / 60	76.7	95.9	2965	62 / 78	50.9	230	3	60	35	AM STD	TWE120A3	CU-W	1	9.84	230	3	60	1	8200	230	1	60	AM STD	TWA120A3	

PACKAGED AIR CONDITIONING UNIT SCHEDULE

UNIT NUMBER	LOCATION AND AREAS SERVED	COOLING COIL DATA: CFM	OA	COOLING TOTAL BTU/HR	HEATING COIL DATA: CFM	OA	HEATING CAPACITY BTU/HR	ELECTRIC COIL DATA: V	PH	HZ	KW	FAN DATA: CFM	MOTOR DATA: WATTS	V	PH	HZ	SELECTION BASED ON: MANUFACTURER	MODEL NUMBER	REMARKS
PTAC-1	SERVER ROOM	300	50	11,700	310	50	10,600	230	1	60	2.0	310	1114	230	1	60	MCQUAY	PSHA1012EZ	

AIR DISTRIBUTION DEVICE SCHEDULE

UNIT NUMBER	SERVICE	SHAPE	MATERIAL	FRAME	FINISH	ACCESSORIES	SELECTION BASED ON: MANUFACTURER	MODEL NUMBER	REMARKS
A	SUPPLY	SQUARE	ALUMINUM	LAY IN	WHITE	OBD	TITUS	350	
B	RETURN	SQUARE	ALUMINUM	LAY IN	WHITE	OBD	TITUS	350	
C	EXHAUST	SQUARE	ALUMINUM	LAY IN	WHITE	OBD	TITUS	350	
D	SUPPLY	RECT	ALUMINUM	SURFACE	WHITE	OBD	TITUS	350	8x8
L1	O A INTAKE	RECT	ALUMINUM	SURFACE	WHITE	SB,BD,BS	RUSKIN	ELF211D	30x24
L2	EXHAUST	SQUARE	ALUMINUM	SURFACE	WHITE	SB,BD,BS	RUSKIN	ELF211D	18x18

GENERAL FAN SCHEDULE

UNIT NUMBER	LOCATION AND AREAS SERVED	TYPE	CFM	TOTAL S.P. IN. H2O	FAN RPM	MOTOR DATA: HP	RPM	V	PH	HZ	SELECTION BASED ON: MANUFACTURER	MODEL NUMBER	REMARKS
EF-1	GENERAL EXHAUST	INLINE	650	1.00	UNIT	1/2	1330	115	1	60	PENNBARRY	210DH	

MECHANICAL GENERAL NOTES

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE STATE AND LOCAL CODES.

THE ROUTING OF ALL DUCTWORK AND PIPING AS SHOWN ON THE DRAWING ARE DIAGRAMMATIC ONLY, INTENDING TO SHOW GENERAL RUNS AND LOCATIONS OF EQUIPMENT, DUCTWORK PIPING AND SPECIALTIES. THE CONTRACTOR SHALL COORDINATE WORK WITH ALL OTHER TRADES.

NO DUCTWORK OR PIPING SHALL BE ROUTED OVER ELECTRICAL EQUIPMENT.

ALL DUCTWORK AND PIPING SHALL BE ROUTED CONCEALED IN WALLS OR ABOVE CEILING EXCEPT IN MECHANICAL EQUIPMENT ROOM WHERE EXPOSED WORK IS ACCEPTABLE.

ALL DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED PER SMACNA.

SUPPLY DUCTWORK SHALL BE LINED, GALVANIZED SHEET METAL WITH INSULATED FLEXIBLE BRANCH DUCTWORK NOT TO EXCEED 10'-0" IN LENGTH.

RETURN AIR AND OUTSIDE AIR DUCTWORK SHALL BE LINED, GALVANIZED SHEET METAL.

EXHAUST DUCTWORK SHALL BE GALVANIZED SHEET METAL. EXHAUST DUCTWORK FROM THE SHOWER ROOM SHALL BE ALUMINUM UNTIL IT CONNECTS TO THE MAIN DUCT.

PROVIDE FIRE DAMPERS AND ACCESS DOORS AS SHOWN.

PROVIDE SECURITY BARS AT ALL VAULT WALL PENETRATIONS.

PROVIDE ELECTRICAL DISCONNECTS FOR ALL MECHANICAL EQUIPMENT.

PROVIDE TYPE L COPPER REFRIGERANT LINES AS SIZED BY THE EQUIPMENT MANUFACTURER.

PROVIDE CONDENSATE TRAPS AND DRAINS TO NEAREST FLOOR DRAIN AND TERMINATE WITH AN AIR GAP.

MECHANICAL SYMBOLS

SYMBOL	DESCRIPTION
A / #	NEW DIFFUSER DESIGNATION (TOP – TYPE/NECK DIAMETER , BOTTOM – CFM)
	NEW EQUIPMENT
	NEW DUCT
	NEW SUPPLY DIFFUSER
	NEW R/A OR EXHAUST GRILLE
	FLEXIBLE DUCT
T	THERMOSTAT
	SPIN-IN TAP WITH VOLUME DAMPER
	SPIN-IN TAP W/O VOLUME DAMPER
	MANUAL VOLUME DAMPER
RL	REFRIGERANT LIQUID PIPE
RG	REFRIGERANT GAS PIPE

MECHANICAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
BD	BACKDRAFT DAMPER
BS	BIRD SCREEN
CU	CONDENSING UNIT
EF	EXHAUST FAN
OBD	OPPOSED BLADE DAMPER
RA	RETURN AIR
SA	SUPPLY AIR
SB	SECURITY BARS
FD	FIRE DAMPER WITH ACCESS DOOR

PROJ. NO.: C650007F
PROJ. MGR.: CS
DESIGNED BY: CLM
DRAWN BY: KTM
CHECKED BY: CS
DATE: 11-30-06

REVISIONS

DRAWING TITLE: FLOOR PLANS, LEGEND, NOTES AND SCHEDULES – MECHANICAL

PROJECT: PROPOSED BUILDING FOR: RICHMOND METROPOLITAN AUTHORITY

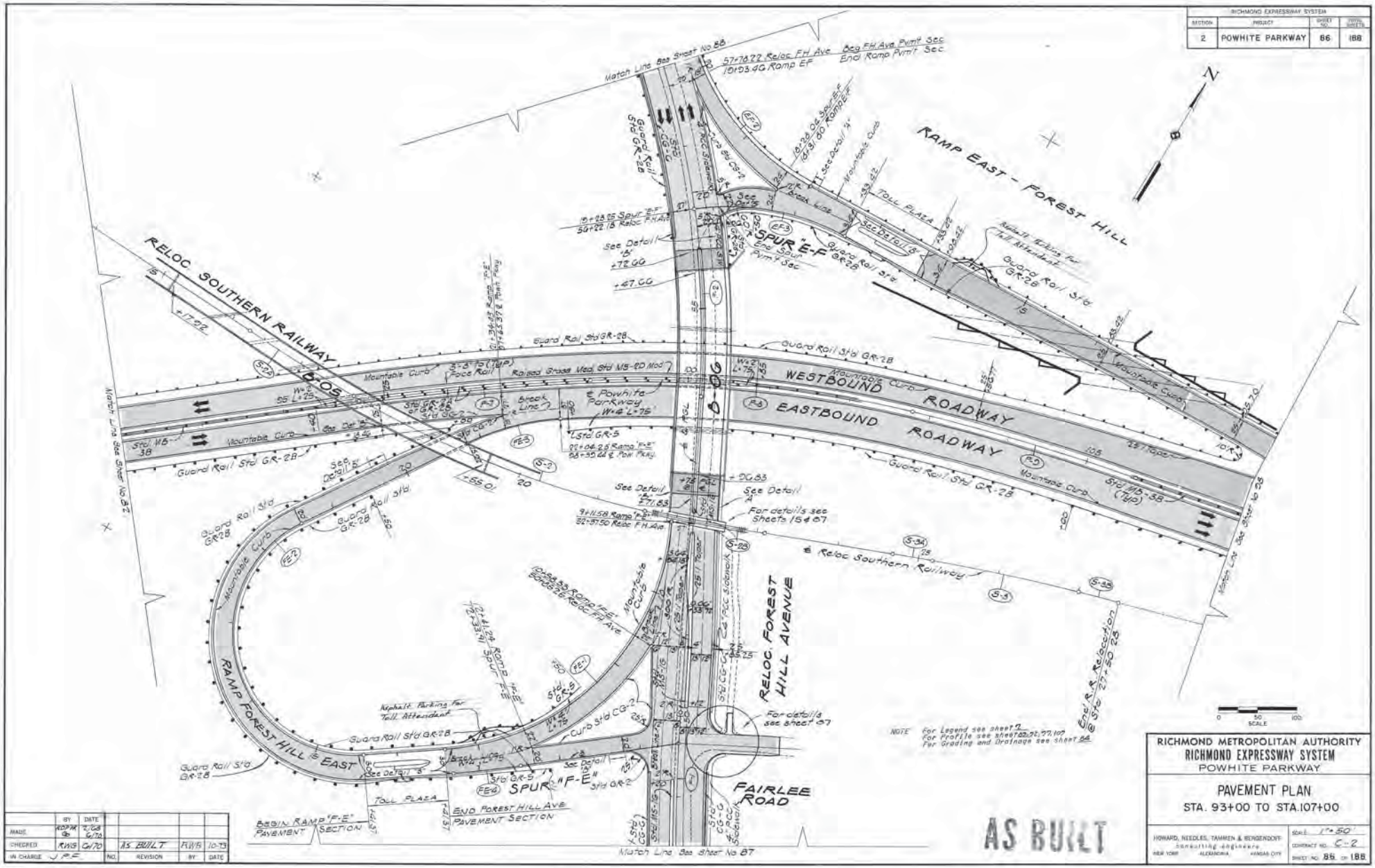
SOUTHWORTH MECHANICAL CORPORATION

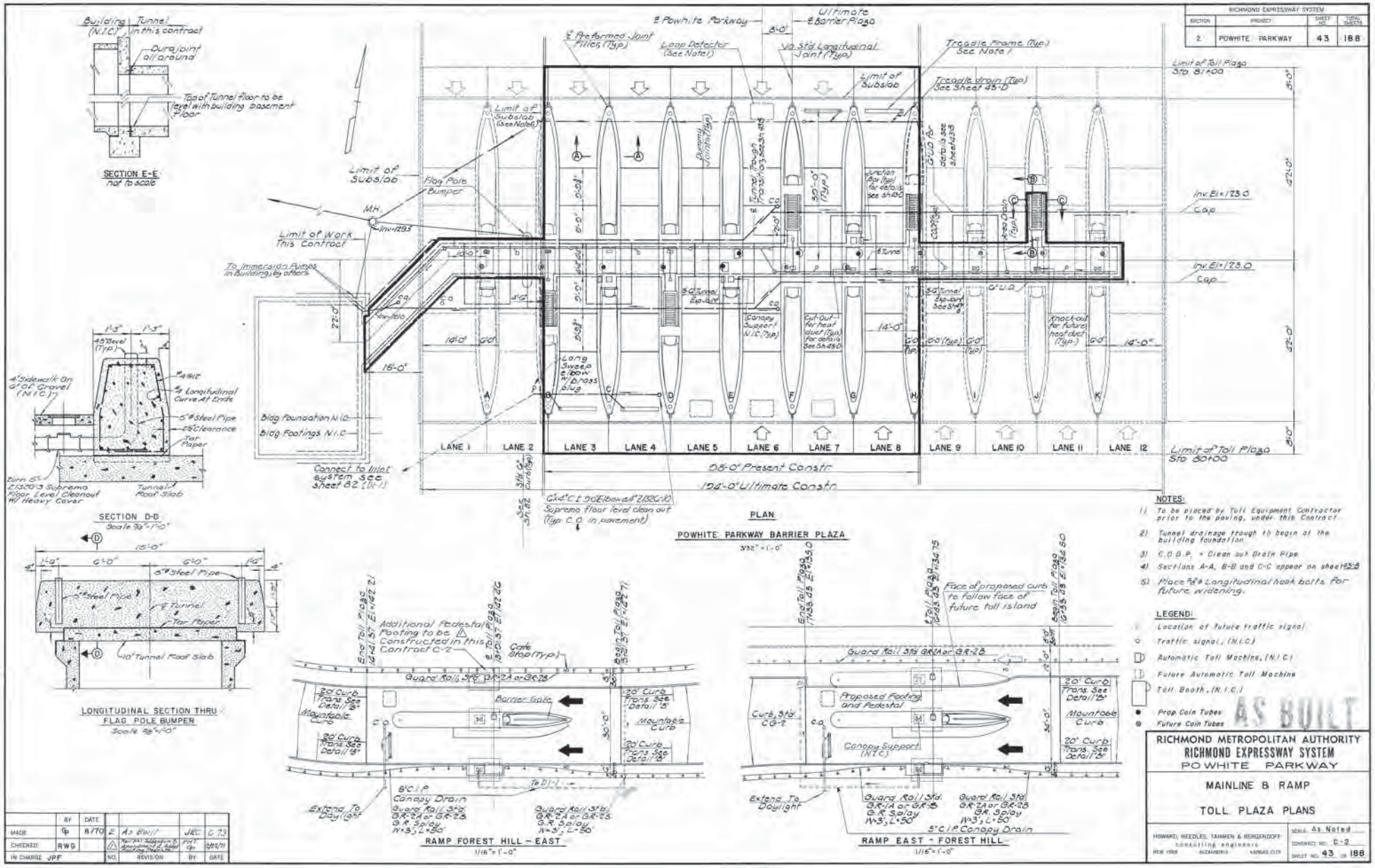
SHEET NO. M-1

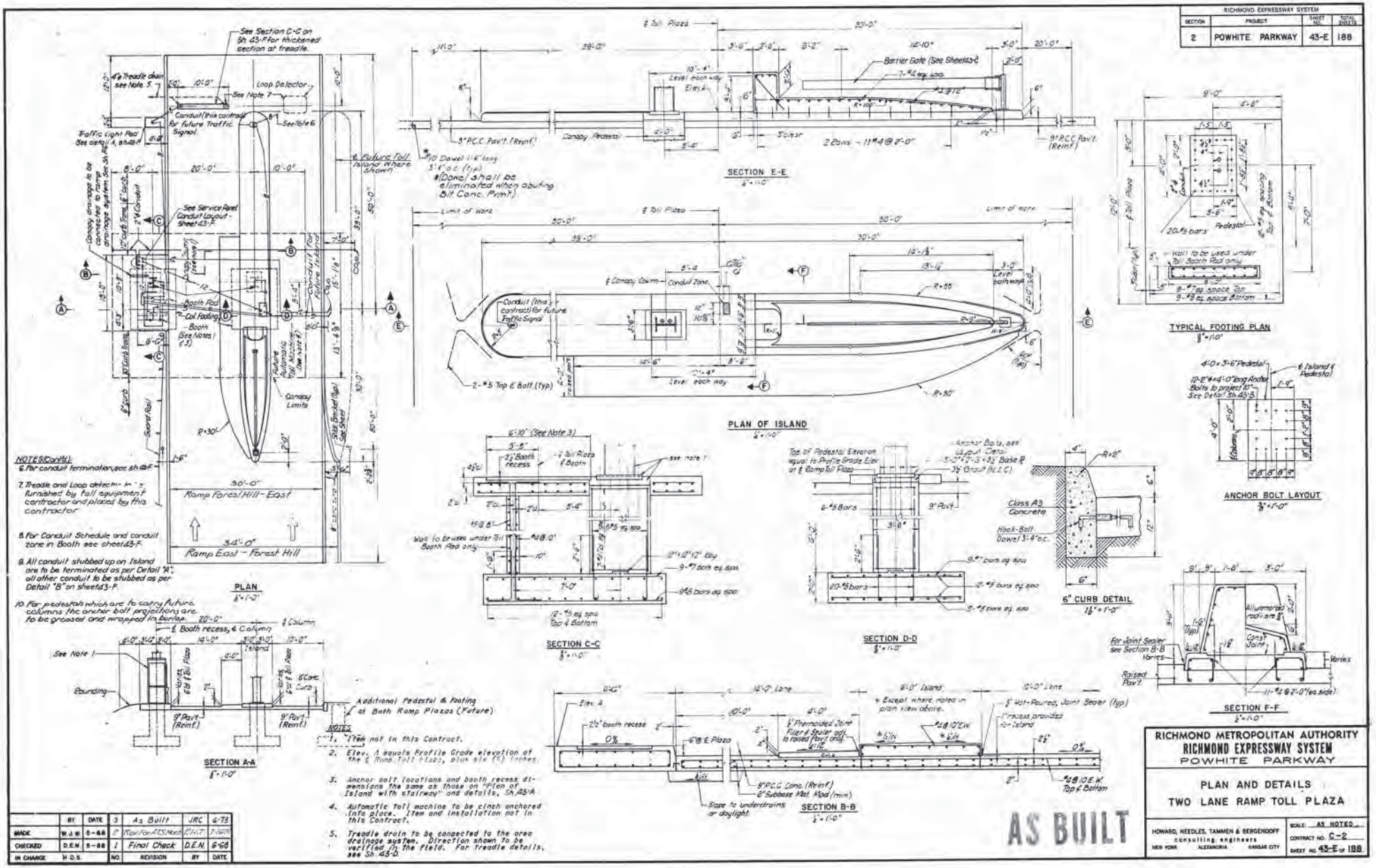
1 OF 1

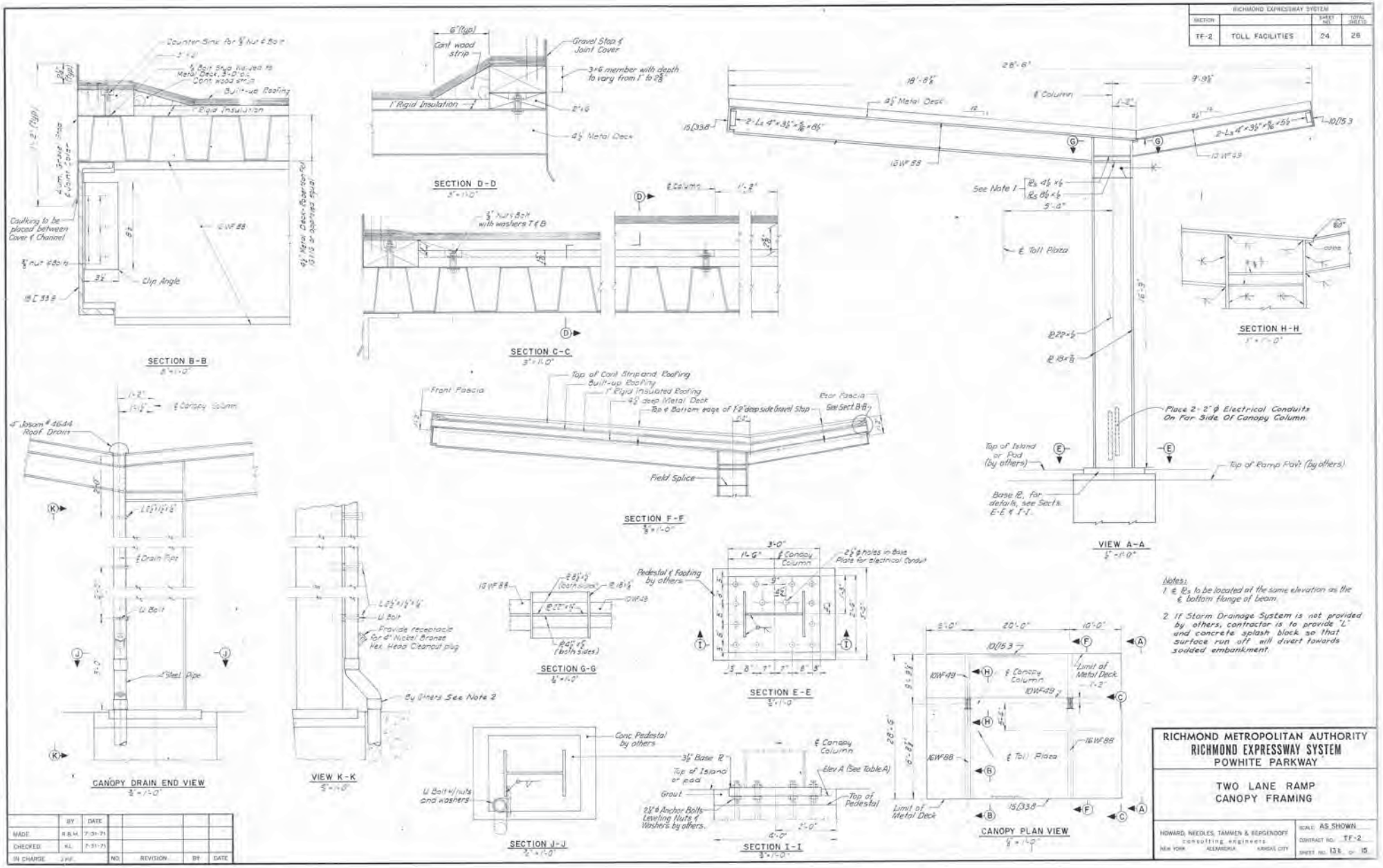
FOREST HILL AVENUE RAMPS

TOLL PLAZA ORIGINAL PLANS


RICHMOND EXPRESSWAY SYSTEM
SECTION 2 PROJECT POWHITE PARKWAY SHEET NO. 66 TOTAL SHEETS 188
RAMP EAST - FOREST HILL
RELOC. SOUTHERN RAILWAY
WESTBOUND ROADWAY
EASTBOUND ROADWAY
SPUR E-F
SPUR "F-E"
RAMP FOREST HILL TO EAST
RELOC. FOREST HILL AVENUE
FAIRLEE ROAD
TOLL PLAZA
BEGIN RAMP "F-E" PAVEMENT SECTION
END FOREST HILL AVE PAVEMENT SECTION
Match Line See Sheet No 87
Match Line See Sheet No 88
Match Line See Sheet No 25
AS BUILT
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY
PAVEMENT PLAN
STA. 93+00 TO STA.107+00
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
SCALE 1"=50'
CONTRACT NO. C-2
SHEET NO 86 OF 188


SECTION E-E
not to scale
PLAN
POWHITE PARKWAY BARRIER PLAZA
3/32" = 1'-0"
SECTION D-D
LONGITUDINAL SECTION THRU
FLAG POLE BUMPER
RAMP FOREST HILL – EAST
RAMP EAST – FOREST HILL
LANE 1
LANE 2
LANE 3
LANE 4
LANE 5
LANE 6
LANE 7
LANE 8
LANE 9
LANE 10
LANE 11
LANE 12
108'-0" Ultimate Constr
98'-0" Present Constr
NOTES:
1) To be placed by Toll Equipment Contractor prior to the paving, under this Contract.
2) Tunnel drainage trough to begin at the building foundation.
3) C.O.D.P. = Clean out Drain Pipe.
4) Sections A-A, B-B and C-C appear on sheet 45-B
5) Place 7/8" ø Longitudinal hook bolts. For future widening.
LEGEND:
Location of future traffic signal
Traffic signal, (N.I.C.)
Automatic Toll Machine, (N.I.C.)
Future Automatic Toll Machine
Toll Booth, (N.I.C.)
Prop. Coin Tubes
Future Coin Tubes
AS BUILT
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
PO WHITE PARKWAY
MAINLINE & RAMP
TOLL PLAZA PLANS
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY
SCALE: As Noted
CONTRACT NO. C-2
SHEET NO. 43 OF 188
RICHMOND EXPRESSWAY SYSTEM
SECTION 2 PROJECT POWHITE PARKWAY SHEET NO. 43 TOTAL SHEETS 188
DRAWN GP 8/70
CHECKED RWG
IN CHARGE JPF
2 As Built JRC 6/73
NO. REVISION BY DATE


RICHMOND EXPRESSWAY SYSTEM
SECTION 2 PROJECT POWHITE PARKWAY SHEET NO. 43-E TOTAL SHEETS 188
PLAN
SECTION E-E
PLAN OF ISLAND
SECTION C-C
SECTION D-D
SECTION A-A
SECTION B-B
SECTION F-F
TYPICAL FOOTING PLAN
ANCHOR BOLT LAYOUT
6" CURB DETAIL
NOTES (Cont'd):
6. For conduit termination, see sh 43-F.
7. Treadle and Loop detectors to be furnished by toll equipment contractor and placed by this contractor.
8. For Conduit Schedule and conduit zone in Booth see sheet 43-F.
9. All conduit stubbed up on Island are to be terminated as per Detail "A", all other conduit to be stubbed as per Detail "B" on sheet 43-F.
10. For pedestals which are to carry future columns the anchor bolt projections are to be greased and wrapped in burlap.
NOTES:
1. Item not in this Contract.
2. Elev. A equals Profile Grade elevation of the ℄ Home Toll Plaza, plus six (6) inches.
3. Anchor bolt locations and booth recess dimensions the same as those on "Plan of Island with stairway" and details, Sh 43-A
4. Automatic toll machine to be cinch anchored into place. Item and installation not in this Contract.
5. Treadle drain to be connected to the area drainage system. Direction shown to be verified in the field. For treadle details, see Sh. 43-D
AS BUILT
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY
PLAN AND DETAILS
TWO LANE RAMP TOLL PLAZA
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY
SCALE: AS NOTED
CONTRACT NO. C-2
SHEET NO. 43-E OF 188

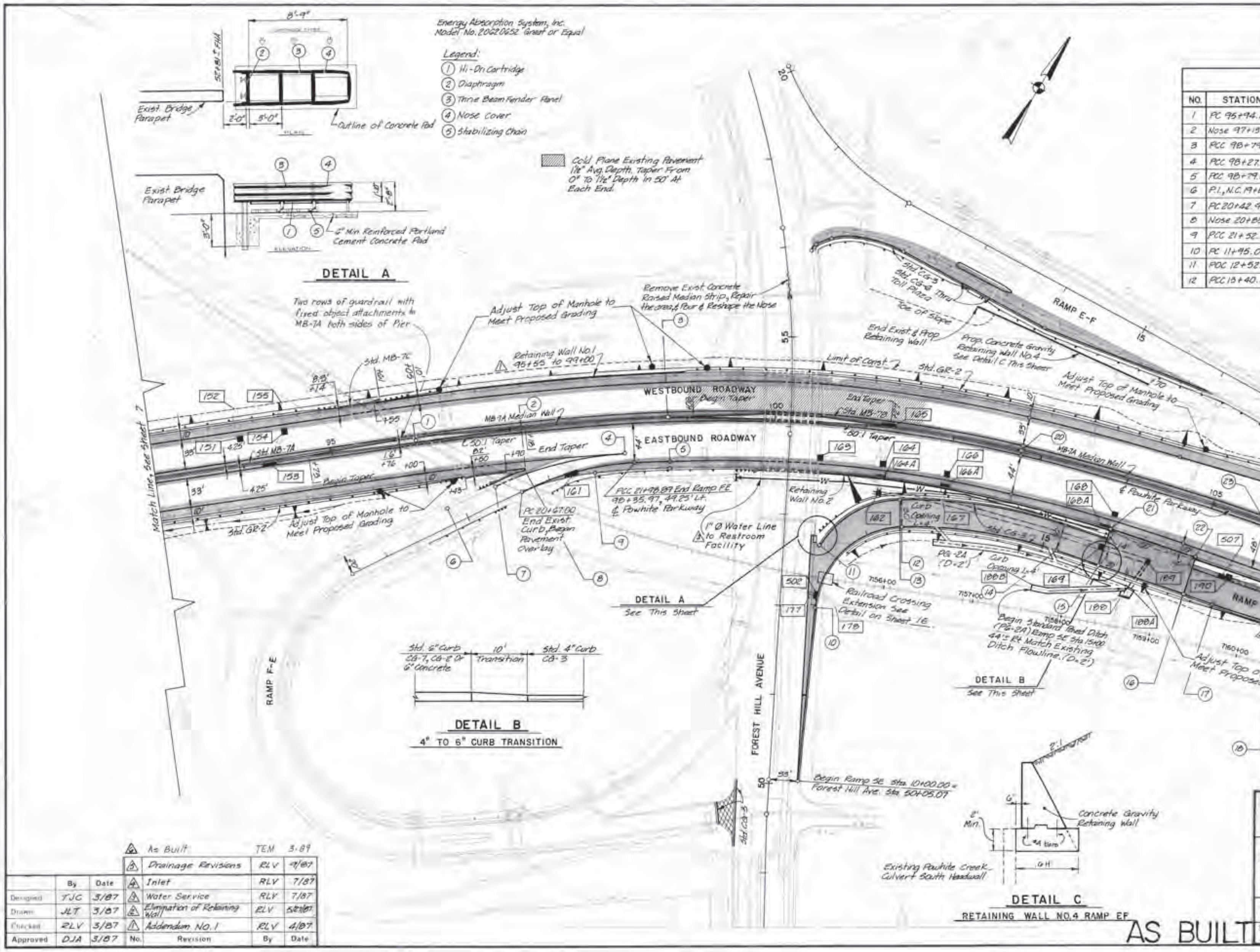

RICHMOND EXPRESSWAY SYSTEM
TF-2 TOLL FACILITIES 24 28
SECTION B-B
SECTION C-C
SECTION D-D
SECTION F-F
SECTION G-G
SECTION H-H
SECTION E-E
SECTION I-I
SECTION J-J
VIEW K-K
CANOPY DRAIN END VIEW
VIEW A-A
CANOPY PLAN VIEW
Notes:
1. ℄ Rs to be located at the same elevation as the ℄ bottom flange of beam.
2. If Storm Drainage System is not provided by others, contractor is to provide "L" and concrete splash block so that surface run off will divert towards sodded embankment.
RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY
TWO LANE RAMP
CANOPY FRAMING
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
consulting engineers
NEW YORK ALEXANDRIA KANSAS CITY
SCALE: AS SHOWN
CONTRACT NO: TF-2
SHEET NO. 13 B OF 15

FOREST HILL AVENUE RAMPS

WIDENING OF RAMP FROM S.B. POWHITE PARKWAY TO FOREST HILL AVENUE

ORIGINAL PLANS FOR CONSTRUCTION OF RAMP FROM E.B. FOREST HILL AVENUE TO N.B. POWHITE PARKWAY

RICHMOND EXPRESSWAY SYSTEM			
SECTION	PROJECT	SHEET NO.	TOTAL SHEETS
12	POWHITE PARKWAY	8	



GEOMETRIC TABLE					
NO.	STATION	OFFSET	NO.	STATION	OFFSET
1	PC 95+94.18		13	POC 13+38.87	30.01' Lt.
2	Nose 97+19.74	46.25' Rt.	14	PT 15+15.78	
3	PCC 98+79.09		15	POT 15+65.78	4.00' Lt.
4	PCC 98+27.43	38.25' Rt.	16	POT 16+65.78	4.00' Lt.
5	PCC 98+79.09	57.25' Rt.	17	PC 17+00.78	
6	P.I., N.C. 19+88.00	20.00' Lt.	18	PT 17+94.45	
7	PC 20+42.99	18.78' Lt.	19	PC 18+22.58	25.06' Lt.
8	Nose 20+88.01	19.34' Lt.	20	PCC 102+77.91	
9	PCC 21+52.34		21	103+97.88	59.12' Rt.
10	PC 11+95.07	40.40' Rt.	22	105+00.00	62.57' Rt.
11	POC 12+52.95	22.00' Lt.	23	PT 105+62.94	
12	PCC 13+40.22				

	By	Date	No.	Revision	By	Date
			6	As Built	TEM	3-89
			5	Drainage Revisions	RLV	9/87
			4	Inlet	RLV	7/87
Designed	TJC	3/87	3	Water Service	RLV	7/87
Drawn	JLT	3/87	2	Elimination of Retaining Wall	RLV	5/87
Checked	RLV	3/87	1	Addendum No. 1	RLV	4/87
Approved	DJA	3/87				

AS BUILT

RICHMOND METROPOLITAN AUTHORITY
RICHMOND EXPRESSWAY SYSTEM
POWHITE PARKWAY

PAVING, GRADING & DRAINAGE PLAN

Sta. 93+00 to Sta. 107+00

HOWARD NEEDLES TAMMEN & BERGENDOFF
Architects Engineers Planners
ALEXANDRIA, VA

HNTB

Scale	Date	Contract No.	Sheet
1" = 50'	MARCH 1987	C-12	8 of