

ADDITIONAL STRUCTURAL GENERAL NOTES WHICH ADDRESS THE REHABILITATION OF THE STATION STRUCTURE AND CONSTRUCTION OF THE WEST PASSAGEWAY ARE ADDRESSED IN THE VS-3000'S SERIES DRAWINGS.

- ALL STATIONS ON THE DRAWINGS ARE IN FEET AND REFER TO THE PROJECT STATIONING SYSTEM. THE PROJECT STATIONING IS SET AND MEASURED ALONG THE CENTERLINES OF SURVEY.
- 2. ALL COORDINATES SHOWN ON THE DRAWINGS ARE IN FEET AND REFER TO THE PROJECT COORDINATE SYSTEM.
- ALL ELEVATIONS SHOWN ON THE DRAWINGS ARE IN FEET AND REFER TO THE NEW YORK CITY TRANSIT AUTHORITY DATUM ELEVATION 100.00 WHICH IS 2.653 FEET ABOVE THE UNITED STATES COAST AND GEODETIC SURVEY DATUM MEAN SEA LEVEL AT SANDY HOOK.
- 4. ALL PLAN DIMENSIONS ARE IN A TRUE HORIZONTAL PLANE, UNLESS NOTED OTHERWISE.
- 5 ALL VERTICAL DIMENSIONS ARE IN A TRUE VERTICAL PLANE, UNLESS NOTED OTHERWISE.
- 5. THE STRUCTURES IN CONTAINED ON THE EXISTING CONDITION DRAWINGS WERE DEVELOPED FROM NYCTA'S AND LIRR'S AVAILABLE EXISTING FACILITIES DRAWINGS AND FIELD OBSERVATIONS. THE EXISTING CONDITION DRAWINGS WERE USED IN THE DEVELOPMENT OF THE DESIGN OF THE TEMPORARY AND FINAL STRUCTURES SHOWN ON THE CONTRACT DWGS. THE CONTRACTOR IS ADVISED THAT THE ACTUAL CONDITIONS MAY VARY FROM DATA SHOWN.
- 7. ALL DIMENSIONS, LOCATIONS AND ELEVATIONS OF EXISTING STRUCTURES SHOWN ON THE DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR IN THE FIELD PRIOR TO PREPARATION OF WORKING OR SHOP DRAWINGS AND COMMENCEMENT OF ANY WORK. IF DISCREPANCIES ARE DISCOVERED BETWEEN EXISTING CONDITIONS AND CONTRACT WORK, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER PRIOR TO PERFORMANCE OF ANY WORK AFFECTED BY THE DISCREPANCY.
- B. PRIOR TO COMMENCEMENT OF THE WORK, THE CONTRACTOR SHALL SUBMIT HIS PROPOSED METHOD AND SEQUENCE OF CONSTRUCTION FOR APPROVAL BY THE ENGINEER. THE SUBMITTALS SHALL ALSO INCLUDE PLANS AND DESIGN CALCULATIONS, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK, FOR ALL TEMPORARY CONSTRUCTION STRUCTURES USED FOR SHORING, BRACING, UNDERPINNING AND SUPPORT, AND SHALL DEMONSTRATE THE STRUCTURAL ADEQUACY OF PARTIALLY COMPLETED STRUCTURES TO SAFELY SUPPORT THE PROPOSED LOADINGS DURING CONSTRUCTION IN ACCORDANCE WITH THE DESIGN CRITERIA.
- CONSTRUCTION JOINTS, KEYS AND/OR DOWELS NOT SHOWN ON THE DRAWINGS SHALL BE LOCATED AS APPROVED OR DIRECTED BY THE ENGINEER.
- 10. WHERE SOIL AT THE SUBGRADE HAS BEEN DISTURBED OR IS DEEMED TO BE UNSATISFACTORY, THE FOOTING SHALL BE CARRIED DOWN TO FIRM GROUND OR ADEQUATE SUPPORT SHALL BE PROVIDED AS DIRECTED BY THE ENGINEER.
- 11. STEEL MEMBERS WITH HORIZONTAL WEBS EMBEDDED IN CONCRETE SHALL BE PROVIDED WITH 3-INCH DIAMETER GROUT HOLES, ABOUT 1'-6" ON CENTERS, IN THE WEB
- 12. FACES OF BENCHES SHALL BE ACCURATELY SET WITH REFERENCE TO, CENTER LINE OF TRACK AND BASE OF RAIL
- 13. FACES OF BENCHES AND PLATFORMS SHALL BE ACCURATELY SET WITH REFERENCE TO CENTER LINE OF TRACK AND BASE OF RAIL.
- 14. ALL BOLTED CONNECTIONS SHALL BE SLIP-CRITICAL.
- 15. ALL RE-ENTRANT CUTS IN STRUCTURAL STEEL SHALL BE FILLETED.
- UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS, ANY CUTS IN BEAM FLANGES AND WEBS SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.
- SURFACES OF STRUCTURAL STEEL SECTIONS TO REMAIN EXPOSED SHALL BE PAINTED IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. SURFACES TO BE EMBEDDED IN CONCRETE SHALL NOT BE PAINTED.

- 18. BEAM-COLUMN CONNECTIONS NOT SHOWN ON THE DRAWINGS SHALL BE STANDARD FRAMED BEAM CONNECTIONS
- 19. ALL FIELD CONNECTIONS OF STRUCTURAL STEEL SHALL BE BOLTED. SHOP CONNECTIONS MAY BE EITHER BOLTED OR WELDED.
- 20. FOR INSERTS, HOLES, FERRULES, DUCTS, PIPES, AND RACEWAYS NOT SHOWN ON THE STRUCTURAL DRAWINGS. REFERENCE SHALL BE MADE TO ALL OTHER CONTRACT DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL COORDINATE REQUIREMENTS OF ALL OTHER DISCIPLINES FOR LOCATIONS OF INSERTS, HOLES, FERRULES, DUCTS, PIPES, AND RACEWAYS.
- 21. ALL EXPOSED CORNERS OF CONCRETE SURFACES AND CONCRETE ENCASEMENTS OF STRUCTURAL STEEL SHALL RECEIVE A 3/4 INCH CHAMFER.
- 22. THE CONTRACTOR IS ADVISED THAT THE EXISTING STEEL STRUCTURES ARE PAINTED WITH PAINT CONTAINING RED LEAD. WHEN EXISTING PAINTED STEEL IS PIERCED OR PAINT IS REMOVED, THE CONTRACTOR SHALL COMPLY WITH ALL THE REQUIREMENTS SPECIFIED IN SECTION 12L OF THE SPECIFICATIONS.
- 23. FOR NOTES ON STRUCTURAL STEEL REPAIR AND CONCRETE REPAIR, SEE VS DRAWINGS.

## DESIGN CRITERIA:

- A. DESIGN CODES AND STANDARDS:
  - 1. "STRUCTURAL DESIGN GUIDELINES" OF THE NEW YORK CITY TRANSIT AUTHORITY(NYCTA), CURRENT FORTION
  - "FIELD DESIGN STANDARDS" OF THE NEW YORK CITY TRANSIT AUTHORITY ENGINEERING DEPARTMENT CONSTRUCTION INTERFACE DIVISION, CURRENT EDITION.
- 3. "BUILDING CODE OF THE CITY. OF NEW YORK," CURRENT EDITION.
- 4. NEW YORK STATE CODE, CURRENT EDITION.
- 5. BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-95).
- "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION,
- "MANUAL FOR RAILWAY ENGINEERING" OF THE AMERICAN RAILWAY ENGINEERING ASSOCIATION, CURRENT EDITION.
- 8. AWS DL5 "BRIDGE WELDING CODE" OF THE AMERICAN WELDING SOCIETY, CURRENT EDITION.
- B. DESIGN LOADS:
  - 1. IN ACCORDANCE WITH NYCTA "STRUCTURAL DESIGN GUIDELINES" FOR PERMANENT STRUCTURES. EXCEPT AS MODIFIED HEREINAFTER:
    SOIL UNIT WEIGHT SATURATED = 130 PCF
    LATERAL EARTH PRESSURE COEFFICIENT = 0.5
  - IN ACCORDANCE WITH NYCTA "FIELD DESIGN STANDARDS" FOR CONSTRUCTION STRUCTURES.
  - 3. IN ACCORDANCE WITH THE "BUILDING CODE OF THE CITY OF NEW YORK" FOR BUILDINGS.
- C. CONSTRUCTION MATERIALS, UNLESS OTHERWISE NOTED.
  - 1. STRUCTURE STEEL SHALL CONFORM TO ASTM DESIGNATION A36, Fy=36,000 PSI AND A572 SD OR Fy=50,000 PSI A490 (AS SHOWN ON CONTRACY DRAWINGS).
  - ALL BOLTS SHALL BE 7/8" DIA. ASTM A325, TYPE1, UNLESS OTHERWISE SHOWN ON THE DRAWINGS, APPROVED OR DIRECTED BY THE ENGINEER.
  - CAST-IN-PLACE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH F'c=4,000 PSI.
  - REINFORCING STEEL SHALL BE ASTM A615, GRADE 60, EPOXY COATED.
  - 5. WELDING ELECTRODES SHALL BE E70XX.

- D. ALLOWABLE UNIT STRESSES FOR WORKING STRESS DESIGN; UNLESS OTHERWISE NOTED:
- 1. CAST-IN-PLACE CONCRETE, F'c=4,000 PSI, n=8:
  - (a) NON-REINFORCED CONCRETE ARCHES:
    - 1) COMPRESSION,....fc=1000 PSI
    - 2) SHEAR AS A MEASURE OF DIAGONAL TENSION,...... v= 63 PSI
  - (b) REINFORCED CONCRETE
    - 1) EXTREME FIBER BENDING STRESS IN COMPRESSION...... fc=1,800 PSI
    - SHEAR IN BEAMS WITHOUT WEB REINFORCEMENT AND SHEAR CARRIED BY CONCRETE....... v=70 PS
    - 3) BEARING ON FULL AREA ...... fb=1000 PSI
    - 4) BOND STRESS BETWEEN CONCRETE AND ROLLED SHAPES...... u=35 PS
    - 5) TENSILE STRESS IN REINFORCING STEEL......fs=24,000 PSI
    - 6) FOR DEVELOPMENT OF REINFORCEMENT AND SPLICES USE ACI 318-95 CHAPTER 12 WITH APPLICABLE ADJUSTMENT FOR EPOXY COATED BARS. ALL SPLICES OF REINFORCEMENT SHALL BE CLASS "B" FOR TENSION, UNLESS OTHERWISE SHOWN.
    - 7) THE CONCRETE COVER FOR REINFORCEMENT SHALL BE IN ACCORDANCE WITH NYCTA STRUCTURAL DESIGN GUIDELINES.
  - (c) FOR DESIGN OF TRACK SLABS, MULTIPLY THE ABOVE ALLOWABLE UNIT CONCRETE STRESSES BY 0.55, AND THE ALLOWABLE STRESS IN REINFORCING STEEL BY 0.75.

## 2. STRUCTURAL STEEL

- (a) COMPRESSION:
  - 1) ON COLUMNS Fg=17-0.000485 (L/r)<sup>2</sup> KSI
    WHERE L= UNBRACED LENGTH OF MEMEBER IN INCHES.

    F= GOVERNING RADIUS OF GYRATION IN INCHES

VALUE OF L/r SHALL NOT EXCEED 120 FOR MAIN MEMBERS AND 150 FOR SECONDARY MEMBERS.

 WEBS OF ROLLED MEMBERS AT TOP OF FILLET Fd=24 KSI (BEAMS NOT EMBEDDED IN CONCRETE SHALL BE INVESTIGATED FOR WEB CRIPPLING.)

(b) TENSION, NET SECTION: Ft= 20 KSI 27 KSI

- (c) EXTREME FIBER BENDING STRESS:
  - 1) COMPRESSION OR TENSION, GROSS SECTION, ...... Fb= 20 KSI 27 KSI
- FOR COMPOSITE CONSTRUCTION, SEE NYCTA STRUCTURAL DESIGN GUIDELINES.
- 3) AT COPINGS AND RE-ENTRANT CUTS, NET SECTION,...... Fb= 15 KSI 20 KSI
- (d) SHEARING STRESS:
- (e) BEARING STRESS:
  - 2) CONTACT AREA OF MILLED SURFACES...... Fp= 24 KSI 33 KSI
    2) CONTACT AREA OF MILLED SURFACES..... Fp= 30 KSI 41 KSI
    3) CONTACT AREA OF ROLLED & MILLED SURFACES..... Fp= 27 KSI 37 KSI

18 KSI

27. KSI

Fv 20 KSI

- - (ALONG THE LEG OF WELD)

    2) TENSION......
  - (g) BOLTS:

    1) SHEARING STRESS A325 Fv=15KSI A490 Fv=18KSI

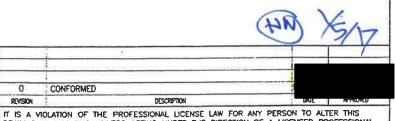
- IRT LOWER CONCOURSE CONSTRUCTION METHOD
- 1. THE SUGGESTED CONSTRUCTION METHODS FOR THE UNDERPINNING OF THE IRT ATLANTIC AVENUE STATION AND THE CONSTRUCTION OF THE IRT ATLANTIC AVENUE STATION'S LOWER CONCOURSE ARE AS FOLLOWS:

SUGGESTED METHOD "A" - DRIFT EXCAVATION METHOD SEE PS-3100 DRAWING SERIES.

SUGGESTED METHOD "B" - PILE SUPPORT METHOD SEE PS-3200 DRAWING SERIES.

THE CONTRACTOR MAY UTILIZE EITHER OF THE ABOVE METHODS.

- THE METHOD CHOSEN BY THE CONTRACTOR, SHALL ADDRESS NYCTA'S CONCERNS ON MINIMIZING IMPACTS TO TRANSIT RAIL OPERATIONS AND PASSENGER SAFETY.
- 3. STRUCTURAL DRAWINGS, SERIES PS-3300'S, REPRESENT THE FINAL STRUCTURE OF THE IRT LOWER CONCOURSE. PLEASE NOTE THAT SOME DRAWINGS WILL BE EFFECTED BY THE METHOD OF UNDERPINNING. THOSE DRAWINGS SO EFFECTED ARE INDENTIFIED IN THE INDEX OF DRAWINGS STRUCTURAL, SEE DWG. NO. PS-3000.
- 4. SHOULD THE CONTRACTOR'S CHOSEN METHOD OF CONSTRUCTION REQUIRE ALTERATIONS TO THE FINAL STRUCTURE, THE CONTRACTOR SHALL PROVIDE DRAWINGS OF THE REVISED DETAILS OF THE FINAL STRUCTURE. THE CONTRACTOR SHALL ALSO PROVIDE REVISED DRAWINGS OF ALL OTHER DISCIPLINES' WORK WHICH ARE AFFECTED BY THE CONTRACTOR'S METHOD. ALL DRAWINGS OF THE FINAL STRUCTURE AND OTHER DISCIPLINES ALTERED BY THE CONTRACTOR SHALL BE SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER OF THE STATE OF NEW YORK.
- 5. THE CONTRACTOR'S CHOSEN METHOD FOR THE UNDERPINNING OF THE IRT STATION, IF DIFFERENT FROM EITHER SUGGESTED METHODS "A" OR "B", SHALL BE PRESENTED TO NYCTA FOR EVALUATION AS A CONTRACTOR'S VALUE ENGINEERING PROPOSAL. THE CONTRACTOR MUST PROVIDE A COMPLETE PROPOSAL ADDRESSING ALL OF NYCTA'S CONCERNS AND ALL ALTERATIONS TO THE FINAL STRUCTURE AS WELL AS ALTERATIONS IMPACTING ALL OTHER DISCIPLINES.
- FOR SUGGESTED METHOD "A" DRIFT EXCAVATION: GENERAL NOTES, SEE DWG. NO. PS-3101 SUGGESTED SEQUENCE OF CONSTRUCTION. SEE DWG. NOS. PS-3102 AND PS-3103.
- 7. FOR SUGGESTED METHOD "B" PILE SUPPORT METHOD GENERAL NOTES, SEE DWG. NO. PS-3201 SUGGESTED SEQUENCE OF CONSTRUCTION, SEE DWG. NOS. PS-3202 AND PS-3203.



IT IS A VIOLATION OF THE PROFESSIONAL LICENSE LAW FOR ANY PERSON TO ALTER THIS DRAWING IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ARCHITECT/ENGINEER AS APPLICABLE. THE ALTERING ARCHITECT/ENGINEER SHALL AFFIX HIS HER SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS OR HER SIGNATURE AND DATE OF ALTERATION.



MTA NYCT/LIRR di Domenico + Partners Archiecture Pianning Urban Design 307 Savath Arma, Nor Yeak, W 10116 CONTRACT A-35695

RECONSTRUCTION OF THE ATLANTIC AVENUE COMPLEX
BOROUGH OF BROOKLYN

ATLANTIC AVENUE STATION-EASTERN PARKWAY LINE-IRT

is just water

Parsons Brinckerhoff

Quade & Douglas, Inc.

STRUCTURAL GENERAL NOTES
DESIGN CRITERIA

Dat Pero Piero, New York, NY 10119				
W. PAREDES	SIGNED	M. DELLA POSTA, P.E.	SIGNED	DATE: 06-01-99
M. DELLA POSTA, P.E.	SIGNED	LG. SILANO, P.E.	SIGNED PROJECT MANGER	DRAWNG NO PS-3001
A. GRIGORYAN, P.E.	SIGNED	M. FRANCESE, P.E.	SIGNED	REVISION O