GENERAL NOTES

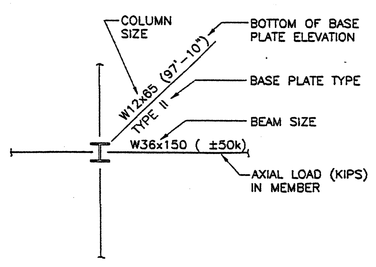
1. THAT WHICH IS REFERENCED AS BEING ON "HOLD" SHALL BE INCLUDED IN THE BID AND WORK, HOWEVER FABRICATION AND/OR CONSTRUCTION SHALL NOT PROCEED UNTIL THE "HOLD" REFERENCE IS REMOVED.
2. ALL ELEVATIONS ARE REFERENCED FROM NATIONAL GEODETIC VERTICAL DATUM.
3. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS OF EXISTING CONSTRUCTION WHICH AFFECTS NEW CONSTRUCTION PRIOR TO SUBMISSION OF SHOP DRAWINGS.
4. CONSTRUCTION WORK TO BE COORDINATED WITH OWNER SO AS TO LEAST INTERFERE WITH OWNER'S OPERATIONS.
5. CONTRACTOR SHALL VISIT JOB SITE DURING BID PERIOD TO ASCERTAIN CONDITIONS UNDER WHICH HE WILL BE WORKING.
6. PROVIDE ADEQUATE FIRE PROTECTION DURING FLAME CUTTING AND WELDING.
7. CONTRACTOR TO INVESTIGATE ACTUAL LOCATIONS OF UNDERGROUND LINES AND UTILITIES BEFORE EXCAVATING, AND ADVISE ENGINEER OF ANY VARIATIONS. ALL EXCAVATIONS NEAR THESE LINES TO BE CARRIED OUT WITH EXTREME CAUTION. NOTIFY OWNER IF APPARENT CONTAMINATED OR HAZARDOUS MATERIALS ARE FOUND.
8. BUILDING CONTRACTOR SHALL ADHERE TO ALL OSHA REQUIREMENTS.
9. CONTRACTOR SHALL TAKE PROPER PRECAUTIONS TO PROTECT PERSONNEL FROM LEAD PAINT WHEN SANDBLASTING OR SANDING EXISTING CONSTRUCTION (OR SIMILAR WORK) WHEN APPROPRIATE.
10. WHEN WORKING WITH EXISTING CONSTRUCTION, CONTRACTOR SHALL NOT DISTURB ASBESTOS MATERIALS OR EXPOSE PERSONNEL TO ASBESTOS.

CONCRETE NOTES

1. ALL FOOTINGS AND FOUNDATIONS ARE DESIGNED FOR MINIMUM SOIL BEARING OF 2500 PSF. FOOTINGS ARE TO BEAR ON UNDISTURBED SOIL OR PROPERLY COMPACTED FILL. REFER TO GEOTECHNICAL REPORT BY BUNNELL-LAMMONS, REPORT #J04-3842-01, DATED DECEMBER 17, 2004 FOR ADDITIONAL INFORMATION.
2. UNLESS OTHERWISE NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS, ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI FOR FOOTINGS AND 4000 PSI FOR ALL OTHER CONCRETE IN 28 DAYS. SEE SPECIFICATIONS FOR MORE DEFINITION.
3. UNLESS OTHERWISE NOTED, ALL REINFORCING STEEL SHALL BE GRADE 60, DEFORMED BARS, CONFORMING TO ASTM A615.
4. UNLESS OTHERWISE NOTED, ALL DETAILING, FABRICATION AND PLACING OF REINFORCING STEEL SHALL CONFORM TO THE MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI-SP-66 – LATEST EDITION).
5. ALL BAR SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS OTHERWISE NOTED.
6. CHAMFER ALL EXPOSED EXTERNAL CORNERS OF CONCRETE WITH 3/4" x 45 DEGREE CHAMFER, UNLESS NOTED OTHERWISE.
7. UNLESS OTHERWISE NOTED, REINFORCE ALL CONCRETE SLABS ON GRADE WITH 6 x 6 – W2.9 x W2.9 WELDED WIRE FABRIC.
8. WELDED WIRE FABRIC REINFORCING SHALL LAP TWO FULL MESHES AND BE SECURELY WIRED AT EACH SIDE AND END.
9. ALL EMBEDDED STRUCTURAL STEEL SHALL BE ASTM A-36, UNLESS NOTED. ANCHOR BOLTS TO BE A-307 UNLESS NOTED.
10. PROVIDE TWO (2) #4 BARS IN TOP OF WALL FOOTINGS SUPPORTING MASONRY WALLS WHERE OPENINGS OF DOORS OCCUR. EXTEND BARS 2'-0" BEYOND EDGE OF OPENINGS.
11. SHORING REQUIREMENTS OF PERMANENT METAL FORMS FOR ELEVATED SLABS SHALL BE DETERMINED BY AND BE THE RESPONSIBILITY OF THE CONTRACTOR.
12. CONTRACTOR TO REFER TO DRAWINGS OF OTHER TRADES AND VENDOR DRAWINGS FOR EMBEDDED ITEMS AND RECESSES NOT SHOWN ON THE STRUCTURAL DRAWINGS.
13. CONTRACTOR SHALL VERIFY ALL SIZES AND LOCATIONS OF ALL MECHANICAL AND ELECTRICAL OPENINGS AND EQUIPMENT PADS WITH THE MECHANICAL AND ELECTRICAL EQUIPMENT DETAILS AND SHOP DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL OPENINGS AND SLEEVES FOR PROPER DISTRIBUTION FOR ALL UTILITY LINES THROUGHOUT THE BUILDING.

STEEL NOTES

1. ALL STRUCTURAL STEEL WIDE FLANGE SHAPES, UNLESS NOTED, SHALL CONFORM TO THE REQUIREMENTS OF ASTM A992, GR. 50. OTHER SHAPES, UNLESS NOTED, SHALL CONFORM TO ASTM A36.
2. ALL DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL, UNLESS OTHERWISE NOTED, SHALL CONFORM TO THE REQUIREMENTS OF THE AISC SPECIFICATIONS FOR BUILDINGS, LATEST EDITION.
3. UNLESS OTHERWISE NOTED, ALL SHOP CONNECTIONS SHALL BE MADE BY WELDING OR HIGH STRENGTH BOLTING. (3/4" MINIMUM DIAMETER BOLTS).
4. WELDS SHALL BE MADE WITH E-70 ELECTRODES.
5. UNLESS OTHERWISE NOTED, ALL FIELD CONNECTIONS SHALL BE MADE WITH 3/4" MINIMUM DIAMETER HIGH STRENGTH BOLTS (ASTM A-325). CONNECTIONS SHALL BE DESIGNED AS BEARING TYPE WITH THREADS IN SHEAR PLANE.
6. UNLESS OTHERWISE SHOWN, ALL BEAM CONNECTIONS SHALL BE STANDARD FRAMED OR SEATED CONNECTIONS AS SHOWN IN PART 4 OF THE AISC MANUAL OF STEEL CONSTRUCTION. UNLESS GREATER REACTIONS ARE INDICATED ON THE PLANS, CONNECTIONS SHALL DEVELOP AT LEAST ONE-HALF OF THE TOTAL UNIFORM LOAD CAPACITY TABULATED IN THE TABLES OF THE MANUAL FOR THE GIVEN SHAPE AND SPAN OF THE BEAM IN QUESTION. IN NO CASE, HOWEVER, SHALL THE LENGTH OF THE FRAMED CONNECTIONS BE LESS THAN ONE-HALF OF THE "T" DISTANCE OF THE BEAM WEB. SHEAR TABS AND SINGLE ANGLE CONNECTIONS SHALL NOT BE USED UNLESS APPROVED BY THE A/E.
7. GUSSET PLATES SHALL BE 3/8" THICK MINIMUM.
8. WHERE PRACTICAL, UNLESS SHOWN DIFFERENTLY ON DRAWINGS, ALL BRACING CONNECTIONS SHALL BE DESIGNED AND DETAILED SO THAT ALL FORCE COMPONENTS CAN BE DELIVERED DIRECTLY TO THE CENTERLINE OF INTERSECTING MEMBERS. WHERE THIS IS NOT DONE, CONNECTIONS SHALL BE DESIGNED TO ACCOUNT FOR RESULTING ECCENTRICITIES.
9. A PROFESSIONAL ENGINEER DULY REGISTERED IN THE STATE OF NORTH CAROLINA SHALL DESIGN OR DIRECTLY SUPERVISE THE DESIGN OF THE CONNECTIONS AND AFIX HIS SEAL TO THE CONNECTION DETAIL DRAWINGS. THE CONNECTIONS SHALL BE DESIGNED FOR THE LOADS AS INDICATED ON THE DRAWINGS.
10. CONNECTIONS FOR ROOF DECK TO BE DESIGNED FOR A MINIMUM NET UPLIFT OF 80 PSF AT CORNERS AND ROOF EDGES AND 60 PSF AT REMAINDER OF ROOF (UNLESS HIGHER LOADS ARE NOTED ON PLANS OR IN THE SPECIFICATIONS). REFER TO BUILDING CODE FOR DEFINITION OF ROOF CORNERS AND ROOF EDGES.
11. ALL COLUMN ANCHOR BOLT HOLES TO BE OVERSIZED IN ACCORDANCE WITH RECOMMENDATIONS OF "AISC" MANUAL FOR "DETAILING FOR STEEL CONSTRUCTION". ALL COLUMN ANCHOR BOLTS TO BE ASTM F 1554, GRADE 36.
12. CONTRACTOR TO PROVIDE ADEQUATE BRACING FOR STRUCTURE SO THAT IT WILL BE STABLE DURING ALL STAGES OF CONSTRUCTION. THE STRUCTURE AND FOUNDATIONS ARE DESIGNED FOR A COMPLETED CONDITION ONLY AND THEREFORE REQUIRES ADDITIONAL SUPPORT TO MAINTAIN STABILITY BEFORE COMPLETION.
13. ROOF DECK IS DESIGNED TO PROVIDE LATERAL SUPPORT TO ROOF JOISTS WHICH IN TURN BRACE TOP CHORD MEMBERS OF TRUSSES BETWEEN SWAY FRAMES. THEREFORE, CONTRACTOR TO TEMPORARILY BRACE THESE TRUSS CHORDS UNTIL JOISTS AND DECKING ARE WELDED PER SPECIFICATIONS.
14. ROOF JOISTS AND THEIR CONNECTIONS SHALL BE DESIGNED FOR A MINIMUM NET UPLIFT OF 70 PSF AT CORNERS, 60 PSF AT ROOF EDGES AND 50 PSF AT REMAINDER OF ROOF. (UNLESS HIGHER LOADS ARE NOTED ON PLANS OR IN THE SPECIFICATIONS). REFER TO BUILDING CODE FOR DEFINITION OF ROOF CORNERS AND ROOF EDGES.
15. CONNECTIONS FOR ROOF DECK TO BE DESIGNED FOR A MINIMUM NET UPLIFT OF 75 PSF AT CORNERS, 65 PSF AT ROOF EDGES AND 55 PSF AT REMAINDER OF ROOF(UNLESS HIGHER LOADS ARE NOTED ON PLANS OR IN THE SPECIFICATIONS). REFER TO BUILDING CODE FOR DEFINITION OF ROOF CORNERS AND ROOF EDGES.
16. ALL GRATING SHALL BE HOT-DIP GALVANIZED BAR GRATING 1 1/4"x 3/16 WITH BEARING BARS AT 1 3/16" ON CENTER. ALL GRATING SHALL BE ATTACHED TO SUPPORTING MEMBERS WITH MINIMUM OF 2 SADDLE CLIPS PER SUPPORTING BEAM.
17. ALL CONNECTIONS FOR TRUSSES, BOTTOM CHORD BRACING, SWAY FRAMES, X-BRACING, LACING AND SIMILAR TYPE MEMBERS SHALL EITHER DEVELOP THE FORCE INDICATED ON THE DRAWINGS OR ONE-HALF THE ALLOWABLE TENSION FORCE IN THE MEMBER, WHICHEVER IS LARGER. ALL CONNECTIONS FOR SWAY FRAMES, X-BRACING AND SIMILAR TYPE MEMBERS SHALL BE DESIGNED TO DEVELOP THE TENSION YIELD CAPACITY OF THE BRACE.
18. (+) INDICATES TENSION IN MEMBER.
    (–) INDICATES COMPRESION IN MEMBER.
19. TRUSSES TO BE ALL WELDED CONSTRUCTION, UNLESS NOTED OTHERWISE. WHERE BOLTS ARE USED, BOTTOM CHORDS TO BE DETAILED TO PRODUCE NO REDUCTION OF GROSS SECTION DUE TO BOLT HOLES.
20. UNLESS OTHERWISE NOTED, ROOF DECK ATTACHMENT TO SUPPORTING STEEL IS TO DEVELOP A DIAPHRAGM SHEAR LOAD OF 500 LBS. PER FOOT. REFER TO SPECIFICATIONS FOR MINIMUM ATTACHMENT OF DECK TO SUPPORTING MEMBERS AND FOR SIDE LAP CONNECTIONS.
21. COLUMN SPLICES SHALL FULLY DEVELOP THE COLUMN.



STEEL PLAN LEGEND

STRUCTURAL DESIGN CRITERIA

CODES AND STANDARDS
- A. NORTH CAROLINA BUILDING CODE (NCBC) 2002 EDITION
- B. (2000 IBC WITH NC AMENDMENTS)
- C. ASCE 7-98 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES"
- D. ASCE 24-98 FLOOD RESISTANT DESIGN AND CONSTRUCTION.
- E. AISC "MANUAL OF STEEL CONSTRUCTION" - 9th EDITION
- F. ACI-99 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY".
- G. INSURANCE UNDER WRITER - IRI (INDUSTRIAL RISK INSURERS).
- H. ACI 530-99 BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES.

WAREHOUSE

VERTICAL LOADS

ROOF

ROOFING & FRAMING	15 PSF
MISC.	5
TOTAL DL	20 PSF
LIVE LOAD	20 PSF

ELEVATED FLOORS

2" SLAB	25 PSF
FRAMING	5
MISC.	5
TOTAL DL	35 PSF
LIVE LOAD	100 PSF

SNOW
GROUND SNOW 10 PSF

LATERAL LOADS

WIND BASIC WIND SPEED 3S GUST (V3s) = 130 MPH
IMPORTANCE FACTOR = 1.0
EXPOSURE: D
INTERNAL PRESSURE COEFFICIENT:
TO BE DETERMINED BY BLDG. MANUFACTURER
COMPONENTS AND CLADDING DESIGN PRESSURE:
TO BE DETERMINED BY BLDG. MANUFACTURER

SEISMIC SEISMIC USE GROUP: I
SEISMIC RESPONSE COEFFICIENTS:
SDS = .128
SD1 = .096
SITE CLASS: D
BASIC SEISMIC-FORCE-RESISTING SYSTEM:
TO BE DETERMINED BY BLDG. MANUFACTURER -
FOR PURPOSES OF PRELIMINARY FOUNDATION DESIGN: 7A
DESIGN BASE SHEAR: TO BE DETERMINED BY BLDG. MANUFACTURER
FOR PURPOSES OF PRELIMINARY FOUNDATION DESIGN: 25 KIPS
ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE PROCEDURE

MAINTENANCE BUILDING EXPANSION

VERTICAL LOADS

ROOF

ROOFING SYSTEM AND METAL DECK	3 PSF
MISC.	5 PSF
ROOF PURLINS	7 PSF
ACTUAL WEIGHT OF TRUSSES USED	
GYPSOM CEILING AT BOTTOM CHORD OF TRUSS	5 PSF
TOTAL DL	20 PSF
LIVE LOAD	20 PSF (NO REDUCTION ALLOWED)

SNOW
GROUND SNOW 10 PSF

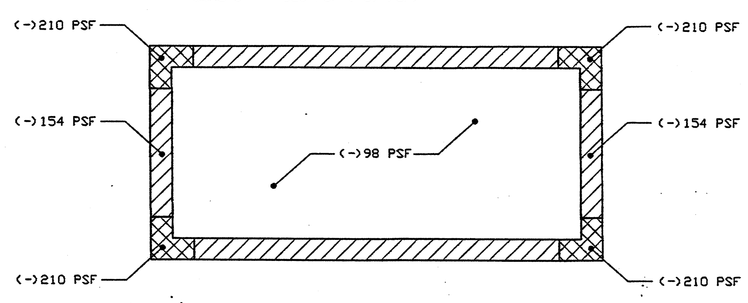
LATERAL LOADS

WIND BASIC WIND SPEED 3S GUST (V3s) = 130 MPH
IMPORTANCE FACTOR = 1.0
EXPOSURE: D
INTERNAL PRESSURE COEFFICIENT ± .18 (ENCLOSED BLDG.)

SEISMIC SEISMIC USE GROUP: I
SEISMIC RESPONSE COEFFICIENTS:
SDS = .128
SD1 = .096
SITE CLASS: D
BASIC SEISMIC-FORCE-RESISTING SYSTEM:
DESIGN BASE SHEAR = 90 KIPS
IMPORTANCE FACTOR = 1.0
SEISMIC DESIGN CATERGORY "B"
ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE PROCEDURE
SEISMIC RESISTANCE SYSTEM: (7A) STRUCTURAL STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE.

WIND DESIGN PRESSURES (WALL COMPONENTS AND CLADDING) Ae ≤ 12 FT^2

ZONE 4 ±67 PSF
ZONE 5 -123 PSF (+67 PSF)



NET ROOF UPLIFT LOAD DIAGRAM
COMPONENTS AND CLADING PRESSURES

NOTES:
1. BASED ON MAXIMUM (10 FT/SQ.) TRIBUTARY AREA IN ACCORDANCE WITH ASCE 7-98.
2. FOR ROOFING MEMBRANE SYSTEM DESIGN USE FM 1-200 WINDSTROM RATING.

FOUNDATION DESIGN PARAMETERS

Ka = .33 ACTIVE SOIL PRESSURE
Ko = .50 AT REST SOIL PRESSURE
Kp = 3.0 PASSIVE SOIL RESISTANCE
γs = 120 PCF UNIT SOIL WEIGHT
fs = .50 COEFFICIENT OF FRICTION

FLOOD LOAD

BASE FLOOD ELEVATION (BFE) = 8.0 FEET
FLOOD INSURANCE RATE MAP (FIRM)

STRUCTURAL PARTIALLY LOCATED IN COASTAL HIGH HAZARD AREA (VE ZONE).

MASONRY DESIGN

1. Fm' = 1500 PSI MINIMUM COMPRESSIVE STRENGTH
2. Fy = 60,000 PSI DEFORMED REINFORCING BARS, ASTM A615.
3. ASTM C90 CONCRETE MASONRY UNITS, LAID IN RUNNING BOND WITH TYPE M OR S MORTAR.

TOOL ROOM ADDITION

VERTICAL LOADS

ROOF

ROOFING & FRAMING	15 PSF
MISC.	5
TOTAL DL	20 PSF
LIVE LOAD	20 PSF

ELEVATED FLOORS

4" SLAB	50 PSF
FRAMING	15
MISC.	5
TOTAL DL	70 PSF
LIVE LOAD	100 PSF

SNOW
GROUND SNOW 10 PSF

LATERAL LOADS

WIND BASIC WIND SPEED 3S GUST (V3s) = 130 MPH
IMPORTANCE FACTOR = 1.0
EXPOSURE: D
INTERNAL PRESSURE COEFFICIENT: +.18 (ENCLOSED BLDG.)

SEISMIC SEISMIC USE GROUP: I
SEISMIC RESPONSE COEFFICIENTS:
SDS = .128
SD1 = .096
SITE CLASS: D
BASIC SEISMIC-FORCE-RESISTING SYSTEM:
DESIGN BASE SHEAR = 7 KIPS
IMPORTANCE FACTOR = 1.0
SEISMIC DESIGN CATEGORY "C"
ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE PROCEDURE
SEISMIC RESISTANCE SYSTEM: (7A) STRUCTURAL STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE.

WIND DESIGN PRESSURES (WALL COMPONENTS AND CLADDING)
(BASED ON MAXIMUM 10 SQ. FT. TRIBUTARY AREA IN ACCORDANCE WITH ASCE 7-98)

ZONE 1 -50 PSF (+20 PSF)
ZONE 2 -85 PSF (+20 PSF)
ZONE 3 -128 PSF (+20 PSF)
ZONE 4 -55 PSF (+50 PSF)
ZONE 5 -68 PSF (+50 PSF)

NORTH CAROLINA PROFESSIONAL SEAL 021033 ENGINEER
Charles W. Griffith
16 Feb 05

NO	DATE	REVISION	BY	CK.	APPR.
0	16 FEB 2005	ISSUED FOR BID/CONSTRUCTION – STAGE 1 PACKAGE	RJY	JGG	JGG

DESIGNED BY RJY
CHECKED BY J. GRIFFITH
APPR. BY J. GRIFFITH
CLIENT APPR.

LOCKWOOD GREENE
ENGINEERING & CONSTRUCTION
Spartanburg, South Carolina

SHEET TITLE: STRUCTURAL GENERAL NOTES AND CRITERIA

JOB NAME: PHASE VII
MARINE MAINTENANCE FACILITY
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
MANNS HARBOR, NC

JOB NO. 019064.03
FILENAME S-701.dwg
SCALE AS NOTED
REV. NO. 0
DWG. NO. S-701

LGRE13_FSIZE, Architectural E1, 36 x 42 in.