

**SURVEY CONTROL POINTS
(PROJECT COORDINATE SYSTEM)**

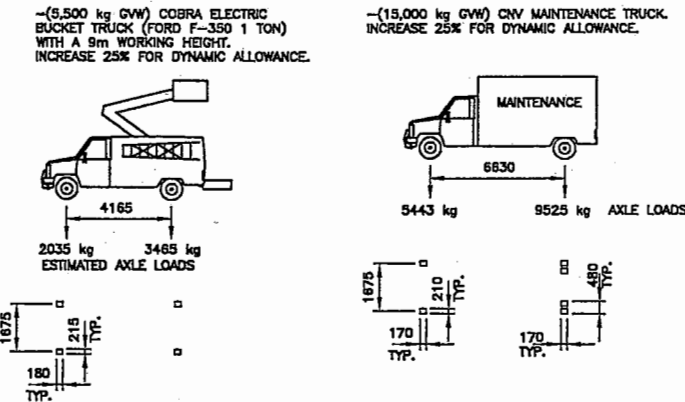
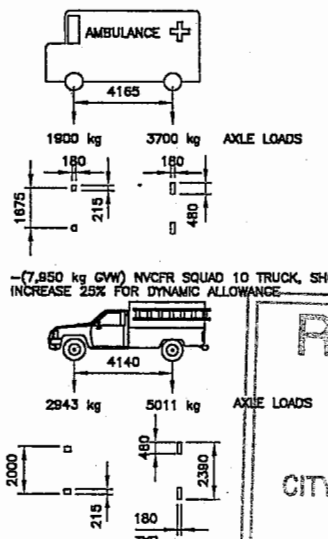
WORK POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
WP51	366.391	499.636	4.606	NAIL ON WOOD RAIL
WP52	342.374	708.870	4.350	CONCRETE NAIL
WP53	362.295	512.483	--	OLD IRON PIN
WP54	374.412	498.632	--	OLD IRON PIN
WP75	362.321	731.721	--	OLD IRON PIN
WP61	372.633	625.614	3.713	CONCRETE NAIL
WP82	363.841	584.090	3.327	CONCRETE NAIL
WP83	363.823	546.998	2.562	CONCRETE NAIL

INTEGRATED SURVEY AREA

1.0 PROJECT CO-ORDINATE SYSTEM DEFINITION
 1.1 PROJECT GRID ORIGIN LOCATED (NOT SHOWN) AT SOUTHWEST CORNER OF LOT 5, (FORMER PCL 16).
 PROJECT GRID ORIENTATION IS PARALLEL AND PERPENDICULAR TO LONSDALE AVE. (ASSUMED 00°00'00")
 PROJECT ORIGIN: N=500,000 E=500,000 (METRES)
 2.0 PROJECT CO-ORDINATE TIE-IN TO UTM CO-ORDINATE SYSTEM
 2.1 UTM CO-ORDINATES MON 87H3669: N 5462124.602 E 494295.260 (PUBLISHED UTM)
 PROJECT CO-ORDINATES PT#1: N 627.850 E 487.041 (GROUND)
 UTM SHIFT= N 5461486.752 E 483798.219
 2.2 UTM GRID BEARING FROM MON 87H3669 TO MDN 73H1026= 123°41'58"
 PROJECT BEARING FROM PT#1 TO PT#2= 89°58'44"
 ROTATION (CLOCK WISE FROM NORTH @ MON 87H3669)= 33°43'10"
 2.3 GRID BEARINGS ARE DERIVED FROM OBSERVATIONS BETWEEN CONTROL MONUMENT 73H1026 AND 87H3669 INTEGRATED SURVEY AREA #44, NAD83, (C.S.R.S.), CITY OF NORTH VANCOUVER.
 2.4 THIS PLAN SHOWS GROUND LEVEL MEASUREMENT DISTANCES, PRIOR TO COMPUTATION OF U.T.M. CO-ORDINATES, MULTIPLIED BY A BENCHMARK SCALE FACTOR OF 0.9998003.
 2.5 THE ABOVE SURVEY INFORMATION FOR PROJECT CO-ORDINATE SYSTEM AND TIE-IN TO UTM HAS BEEN DERIVED FROM DRAWING FILE L12624-46 BY BENNETT & ASSOCIATES DATED JANUARY 7, 2004.

DESIGN CRITERIA

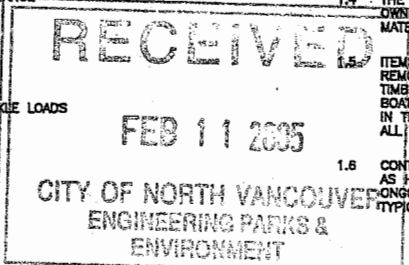
1.0 DESIGN STANDARDS
 1.1 STRUCTURES HAVE BEEN DESIGNED IN ACCORDANCE WITH THE LATEST VERSION OF THE FOLLOWING STANDARDS:
 CAN/CSA-086.1 ENGINEERING DESIGN IN WOOD (LIMIT STATES DESIGN)
 CAN/CSA-518.1 LIMIT STATES DESIGN OF STEEL STRUCTURES
 CAN/CSA-A23.3 DESIGN OF CONCRETE STRUCTURES
 2.0 TIDE ELEVATIONS
 2.1 ALL ELEVATIONS AND DEPTHS ARE IN METRES AND DECIMALS THEREOF TO GEODETIC DATUM.
 2.2 SOUNDING SURVEYS COMPLETED BY WESTMAR ON AUGUST 30, 2001, AND SEPTEMBER 9, 2001, USING A TRIMBLE PATHFINDER PRO XRS 12/TSC0 WITH DIFFERENTIAL CORRECTION AND MERDATA MD100 SOUNDER. THE SOUNDING INFORMATION DEPICTED ON THIS PLAN REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITION EXISTING AT THAT TIME.
 2.3 ELEVATIONS ARE TO CITY OF NORTH VANCOUVER GEODETIC DATUM. BENCH MARK USED: CONTROL MONUMENT 73H1026 LOCATED AT THE INTERSECTION OF ST. GEORGES AVENUE AND EAST 1ST STREET ELEVATION 19.339 METRES.
 2.4 TIDE LEVELS ARE AS FOLLOWS:
 HIGH HIGH WATER LEVEL (H.H.W.L.) 2.00 METRES
 MEAN WATER LEVEL (M.W.L.) 0.00 METRES
 LOW LOW WATER LEVEL (L.L.W.L.) -3.1 METRES
 3.0 FILL AND SLOPE PROTECTION
 3.1 WAVES:
 SIGNIFICANT WAVE HEIGHT: H_s = 1.25m
 PEAK WAVE PERIOD: T_p = 3.5 SECONDS
 3.2 GEOTECHNICAL:
 FILL IS DESIGNED FOR STATIC STABILITY. IN-SITU SOILS ON WHICH FILL IS PLACED MAY HAVE A POTENTIAL FOR LIQUEFACTION UNDER SEISMIC EVENTS.
 4.0 FLOAT AND GANGWAY AT PIER 'A'
 4.1 DEAD LOAD SHALL INCLUDE THE WEIGHT OF ALL STRUCTURAL FRAMING AND OTHER COMPONENTS FIXED TO AND PERMANENTLY INTEGRATED INTO THE STRUCTURE.
 4.2 SNOW LOADS SHALL BE IN ACCORDANCE WITH THE B.C. BUILDING CODE. (SNOW LOAD BASED ON BCBC FOR NORTH VANCOUVER)
 S_s = 2.7 KPa
 S_r = 0.3 KPa
 4.3 WIND SPEED:
 1:30 YEAR RETURN PERIOD HOURLY WIND SPEED (BASED ON DATA FOR VANCOUVER, B.C.) 108 Kph
 4.4 FLOAT TO BE DESIGNED TO WITHSTAND LOADS FROM WAVES WITH MAXIMUM HEIGHT:
 H_{max} = 2.25 METRES
 T_p = 3.5 SECONDS
 4.5 DESIGN VESSEL:
 LOADS ON FLOATS TO BE ASSESSED ON THE BASIS OF THE PRIDE OF VANCOUVER HARBOUR CRUISE VESSEL AND THE FAIR JEANNE SAIL BOAT VESSEL.
 4.6 BERTHING CRITERIA:
 -MAXIMUM BERTHING VELOCITY PERPENDICULAR TO BERTH FACE = 0.5m/s
 -MAXIMUM ANGLE OF APPROACH = 10 DEGREES
 -QUARTER POINT BERTHING
 5.0 PIER 'B' PRECAST CONCRETE SLAB LOADS
 5.1 THE PRECAST CONCRETE SLABS ARE DESIGNED FOR THE FOLLOWING LOADS:
 -UNIFORMLY DISTRIBUTED DEAD LOAD FROM OVERLYING DECK FINISH: 3.0 KPa
 -UNIFORMLY DISTRIBUTED LIVE LOAD: 4.8 KPa
 -STANDARD(9,600 kg GVW) AMBULANCE AS USED BY BC AMBULANCE, SHOWN BELOW. INCREASE 25 PERCENT FOR DYNAMIC ALLOWANCE.



6.0 EXISTING, RELOCATED AND NEW BOLLARDS AT PIER 'B'
 6.1 THE DESIGN MOORING LINE LOAD ON THE BOLLARDS ARE AS FOLLOWS:
 MAXIMUM TOTAL LINE PULL: 344 kN (35 TONNES)
 MAXIMUM INCLINATION ABOVE HORIZONTAL: 30°
 OFFSHORE RANGE: 180'
 6.2 THE DESIGN MOORING LINE LOAD ON THE CLEAT IS AS FOLLOWS:
 MAXIMUM TOTAL LINE PULL: 130 kN (13.25 TONNES)
 MAXIMUM INCLINATION ABOVE HORIZONTAL: 30°
 OFFSHORE RANGE: 180'
 6.3 ALL BOLLARDS AND CLEATS SHALL BE PAINTED GLOSS BLACK IN ACCORDANCE WITH THE SPECIFICATIONS.
 6.4 ALL ANCHOR BOLTS, NUTS AND WASHERS NOT EMBEDDED INTO CONCRETE SHALL BE HOT DIP GALVANIZED.
 7.0 FENDER SYSTEM AT PIER 'B'
 7.1 250x125# HOLLOW RUBBER CYLINDER FENDERS BY BRIDGESTONE CORPORATION OR APPROVED EQUIVALENT. PROVIDE THE FOLLOWING RATED ENERGY ABSORPTION & REACTION:
 E=0.86 TONNE-METRE PER LINEAL METRE (MINIMUM)
 R=12.2 TONNES PER LINEAL METRE (MAXIMUM)
 7.2 18# STUD LINK CHAIN GRADE 2 WITH THE FOLLOWING MINIMUM TEST REQUIREMENTS:
 PROOF LOAD=151kN
 BREAK LOAD=212kN
 7.3 19# SHACKLES TO BE HI-TEST WITH THE FOLLOWING MINIMUM TEST REQUIREMENTS:
 SAFE WORKING LOAD=42kN
 BREAK LOAD=252kN
 7.4 CHAINS, SHACKLES, U-BOLTS & MISCELLANEOUS FITTINGS TO BE HOT DIP GALVANIZED IN ACCORDANCE WITH CSA STANDARD G164
 7.5 THE FENDER SYSTEM FOR PIER 'B' PROVIDES EQUAL OR BETTER BERTHING CAPACITY TO THAT PROVIDED BY THE HISTORICAL FENDER SYSTEM. FENDERING REQUIRED BEYOND THAT PROVIDED IS THE RESPONSIBILITY OF INDIVIDUAL VESSELS.
 7.6 DESIGN VESSEL:
 HALIFAX CLASS FRIGATE
 7.7 BERTHING CRITERIA:
 -MAXIMUM BERTHING VELOCITY PERPENDICULAR TO BERTH FACE = 0.15m/s
 -MAXIMUM ANGLE OF APPROACH = 10 DEGREES
 -QUARTER POINT BERTHING

GENERAL NOTES

1.0 GENERAL
 1.1 DETAILED REQUIREMENTS FOR MATERIALS AND FABRICATION ARE DESCRIBED IN THE SPECIFICATIONS. FOR CONVENIENCE, CERTAIN EXTRACTS ARE REPRODUCED BELOW. IN THE EVENT OF A CONFLICT THE MORE STRINGENT REQUIREMENT SHALL GOVERN.
 1.2 DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
 1.3 THE DIMENSIONS AND DETAILS OF THE EXISTING STRUCTURES ARE APPROXIMATE AND MAY BE SUBJECT TO CONSTRUCTION VARIATIONS AND MODIFICATIONS. THE CONTRACTOR SHALL VERIFY THE CRITICAL DIMENSIONS AND DETAILS, INCLUDING THE SIZE, DRESSING, AND LENGTH OF REPLACEMENT TIMBERS PRIOR TO PROCURING MATERIALS.
 1.4 THE CONTRACTOR SHALL COORDINATE ALL ACTIVITIES WITH THE OWNER. LOCATION OF THE CONTRACTOR'S SITE OFFICE AND MATERIALS STORAGE SHALL BE APPROVED BY THE OWNER.
 1.5 ITEMS THAT ARE INCIDENTAL TO THE WORK, SUCH AS TEMPORARY REMOVAL AND REINSTATEMENT OF HARDWARE INCLUDING STRUCTURAL TIMBERS, WATER MAINS, ELECTRICAL CONDUITS, STEEL PLATFORMS, BOAT DAVITS AND OTHER MISCELLANEOUS ITEMS SHALL BE INCLUDED IN THE PRICE. WATER MAINS SHALL BE MAINTAINED IN OPERATION AT ALL TIMES.
 1.6 CONTRACTOR TO CONFIRM ALL WORKS PERFORMED SHALL BE CERTIFIED AS HAVING A MINIMUM LIFE SPAN OF 25 YEARS AND DURABLE SUCH THAT ONGOING MAINTENANCE AND REPAIR COSTS WILL NOT BE GREATER THAN TYPICALLY EXPECTED.



No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D	No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D	No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D

CLIENT	RM	RDR	ERM	PLN	PLN
PROJECT	RM	RDR	ERM	PLN	PLN
DRAWING SCALE	PROJECT NUMBER		DRAWING NUMBER		REV.
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Westmar
 Marine, Structural, Civil and Materials Handling Engineers

TITLE
GENERAL ARRANGEMENT

File name: P:\2003A\02719\Struct\FROM 01\SS\02719-00-101.dwg - Layout1
 Unit: Metric; Plot: Feb. 09/05; Plotter: Feb. 09/05

