

GENERAL NOTES:

- ALL ELEVATIONS GIVEN AND NOTED ARE IN METRES AND ARE REFERENCED TO GEODETIC DATUM, NSCM No. 8523, ELEVATION 5.58m. ALL DIMENSIONS GIVEN AND NOTED ARE IN METRES EXCEPT PIPE DIAMETERS WHICH ARE IN MILLIMETRES.
- EXISTING INFORMATION FOR THE DESIGN WAS OBTAINED FROM FIELD SURVEYS AND RECORD PLANS. LOCATION OF UNDERGROUND SERVICES IS APPROXIMATE ONLY. CONFIRM EXISTING SERVICE INFORMATION PRIOR TO CONSTRUCTION. EXCAVATE TO CONFIRM ELEVATION OF EXISTING SERVICES PRIOR TO INSTALLATION OF PROPOSED SERVICES. ALL EXISTING SERVICES SHALL BE PROTECTED DURING CONSTRUCTION. ADEQUATE SUPPORT SHALL BE PROVIDED WHERE NEW PIPE IS CONSTRUCTED BENEATH EXISTING SERVICES.
 - ALIGNMENT OF NATURAL GAS PIPELINE WAS OBTAINED FROM HERITAGE GAS. EXACT DEPTH OF BURY IS UNKNOWN, BUT IT IS ESTIMATED TO BE APPROX. 0.6 m.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH NSRBA / NSCEA STANDARD SPECIFICATION FOR MUNICIPAL SERVICES, HALIFAX AND HALIFAX WATER STANDARDS.
- PROVIDE ALL ENVIRONMENTAL PROTECTION MEASURES WHICH ARE TO BE IN ACCORDANCE WITH REQUIREMENTS OF NSDEL FOR CONSTRUCTION SITES AND THE SPECIFICATIONS.
- THE LOCATIONS OF PROPOSED STRUCTURES IS APPROXIMATE ONLY AND SHALL BE CONFIRMED ON SITE BY DEPT. REPRESENTATIVE.
- UTILITY POLES CONFLICTING WITH PROPOSED WORK SHALL BE RELOCATED BY NSPL. PROVIDE ALL COORDINATION WITH NSPI FOR POLE RELOCATION AS WELL AS ANY TEMPORARY INSTALLATIONS AS REQUIRED TO MAINTAIN SERVICE.
- OBTAIN ANY NECESSARY PERMITS REQUIRED TO PERFORM THE WORK AND COMPLY WITH THE PERMIT REQUIREMENTS AND CONDITIONS. INCLUDING COORDINATION WITH HERITAGE GAS AS REQUIRED FOR EXCAVATION IN PROXIMITY BURIED NATURAL GAS PIPELINES.
- PROVIDE TRAFFIC CONTROL SERVICES AS REQUIRED. MAINTAIN ACCESS AT ALL TIMES AND PROVIDE FOR SAFE VEHICLE AND PEDESTRIAN ACCESS TO BIO AND THE ADJACENT PROPERTIES.

TRENCHING, GRADING AND PAVING

- REMOVE AND DISPOSE OF ALL ASPHALT PAVEMENTS BY FULL DEPTH REMOVAL OR MILLING AS INDICATED WITHIN THE LIMITS OF GRADING. CLEAR, GRUB AND STRIP TOPSOIL WITHIN THE LIMITS OF GRADING.
- TRENCHING FOR SERVICES TO BE IN ACCORDANCE WITH HALIFAX WATER STANDARD DRAWING - HWSO 1440. TRENCH BACKFILL MATERIAL TO BE TYPE 2 GRAVEL TO THE ROAD SUBGRADE.
- TRENCH SIDE SLOPES AS INDICATED ON THE DETAIL DRAWING ARE TYPICAL ONLY. SLOPES SHALL BE CONSTRUCTED ACCORDING TO SOILS CONDITIONS ENCOUNTERED ON SITE AND IN ACCORDANCE WITH REGULATORY AGENCIES. ALTERNATIVELY, TRENCHES MAY BE SUPPORTED BY APPROVED STRUCTURAL SHORING.
- SURPLUS EXCAVATION TO BE REMOVED OFF-SITE OR TO BE PLACED IN LOCATION AS DIRECTED BY DEPT. REPRESENTATIVE.
- ALL EXISTING TREES TO BE LEFT UNDISTURBED UNLESS OTHERWISE NOTED OR DIRECTED BY DEPT. REPRESENTATIVE.
- REMOVE ALL STRUCTURES DESIGNATED FOR REMOVAL (CULVERTS, CROSS-CULVERTS, SIGN POSTS AND STRUCTURES) AS REQUIRED WITHIN THE LIMITS OF GRADING. TRENCHES AND EXCAVATIONS SHALL BE BACKFILLED WITH TYPE 2 GRAVEL. PIPE SHALL ONLY BE PLUGGED AND ABANDONED WITH PERMISSION OF DEPT. REPRESENTATIVE.
- PROVIDE CONCRETE CURB IN ACCORDANCE WITH HALIFAX STANDARD DETAIL HRM 53.
- PROVIDE SIDEWALK IN ACCORDANCE WITH HALIFAX STANDARD DETAILS:
 - URBAN SIDEWALK - HRM 44
 - CONCRETE SIDEWALK REINFORCING - HRM 48
 - PEDESTRIAN RAMP ALIGNMENT TYPICAL URBAN RESIDENTIAL LOCAL INTERSECTION - HRM 49
 - DRIVEWAY RAMP - HRM 50
- REINSTATE EXISTING GRAVEL DRIVEWAYS WITH 300MM MINIMUM DEPTH OF TYPE 1 GRAVEL. EXISTING PAVED DRIVEWAYS TO BE REINSTATED WITH 150MM TYPE 1 GRAVEL AND 50MM OF TYPE C ASPHALT AND TO MATCH EXISTING AS REQUIRED.
- ALL ASPHALT EXCAVATION TO HAVE A SAW CUT EDGE.

STORM SEWER

- WHERE TRENCHING FOR NEW SERVICES EXPOSES AND CROSSES BENEATH EXISTING SERVICES TO REMAIN, EXCAVATION FROM EXISTING PIPE MID-HEIGHT AND BELOW, SHALL BE BACKFILLED WITH UNSHRINKABLE FILL WITH THE FOLLOWING PROPERTIES:
 - PORTLAND CEMENT CONTENT: 25 kg/m³
 - 25 DAY COMPRESSIVE STRENGTH: 1.0 MPa
- MAINTAIN EXISTING SERVICES AT ALL TIMES UNLESS WRITTEN PERMISSION IS GIVEN BY DEPT. REPRESENTATIVE.
- PROVIDE MANHOLES AND CATCHBASINS IN ACCORDANCE WITH HALIFAX WATER STANDARDS
 - MANHOLES IN ACCORDANCE WITH HALIFAX WATER STANDARD DETAIL - HWSO 1450.
 - MANHOLE FRAMES AND GRATES IN ACCORDANCE WITH HALIFAX WATER STANDARD DETAIL - HWSO 1460.
 - CATCHBASINS- 1050 DIAMETER PRECAST IN ACCORDANCE WITH HALIFAX WATER STANDARD DETAIL HWSO-1570.
 - CATCHBASIN FRAMES AND GRATES IN ACCORDANCE WITH HALIFAX STANDARD DETAIL HWSO-1590.
- ALL CATCHBASIN LEADS SHALL BE 300 MM DIAMETER CONCRETE CLASS III UNLESS OTHERWISE NOTED. PROVIDE MINIMUM SLOPE OF 1% ON ALL CATCHBASIN LEADS.
- PROVIDE EXTERNAL DROP STRUCTURE IN ACCORDANCE WITH HALIFAX WATER STANDARD DETAIL - HWSO 1480, WHERE INDICATED.
- THE LOCATION OF STRUCTURES IS APPROXIMATE ONLY AND SHALL BE CONFIRMED ON-SITE.

SANITARY SEWER

- MAINTAIN EXISTING SERVICES AT ALL TIMES UNLESS WRITTEN PERMISSION IS GIVEN BY DEPT. REPRESENTATIVE.
- ALL GRAVITY PIPES SHALL BE PVC DR35 FOR PIPE SIZES GREATER THAN OR EQUAL TO 200mm DIAMETER.
- INSTALL MANHOLES IN ACCORDANCE WITH HALIFAX WATER STANDARDS. HWSO 1450. MANHOLE FRAMES AND GRATES IN ACCORDANCE WITH HALIFAX WATER STANDARD DETAIL - HWSO 1460.
- WHERE DESIGNATED TO REMAIN, EXISTING SANITARY MANHOLES SHALL BE ADJUSTED TO SUIT THE NEW GRADE AS REQUIRED.
- THE LOCATION OF STRUCTURES IS APPROXIMATE ONLY AND SHALL BE CONFIRMED ON-SITE.

WATERMAIN

- MAINTAIN EXISTING SERVICES AT ALL TIMES UNLESS WRITTEN PERMISSION IS GIVEN BY DEPT. REPRESENTATIVE.
- CONFIRM LOCATION OF EXISTING WATERMAIN AND SERVICES PRIOR TO INSTALLATION OF STORM AND SANITARY SEWER. RELOCATE EXISTING WATER SERVICES AS REQUIRED. PROVIDE A MINIMUM 3.0 METRES HORIZONTAL SEPARATION FROM WATERMAIN TO NEW STORM SEWER.

- ALL WATERMANS SHALL BE DUCTILE IRON, AWWA C151, SPECIAL CLASS S2 IN ACCORDANCE WITH HALIFAX WATER CRITERIA.
- WATERMANS SHALL BE INSTALLED AT GRADES AS SHOWN ON THE PROFILES WITH CONTINUOUS SLOPES AT A MINIMUM OF 0.2%.
- IN-LINE CONNECTIONS TO EXISTING WATER MAINS (I.E. NOT BY WAY OF TEE) SHALL BE MADE AT EXISTING PIPE JOINTS WHEREVER POSSIBLE. AT CONNECTIONS REQUIRING A BEND FITTING, ANY PIPE JOINTS WITHIN 6 m LENGTH EITHER SIDE OF CONNECTION SHALL BE MECHANICALLY RESTRAINED.
- THE LOCATION OF THE WATERMAIN AND CLEARANCE TO OTHER SERVICES SHALL MEET THE REQUIREMENTS OF HALIFAX WATER. TYPICAL CLEARANCES ARE SHOWN ON THE TRENCH DETAILS.
- THE WATERMAIN SHALL HAVE A MINIMUM COVER OF 1.8 M AND A MAXIMUM COVER OF 2.5 M. FOR WATERMANS WITH LESS THAN REQUIRED COVER, PROVIDE 100 PSI INSULATION IN ACCORDANCE WITH THE SPECIFICATIONS.
- UNLESS OTHERWISE INDICATED, THE ABANDONED WATERMAIN PIPE IS TO BE REMOVED.
- TRENCH BACKFILL MATERIAL TO BE TYPE 2 GRAVEL.
- WHERE DESIGNATED TO REMAIN, EXISTING WATER VALVES AND FIRE HYDRANTS SHALL BE ADJUSTED TO SUIT THE NEW GRADE AS REQUIRED.
- THRUST RESTRAINT:

- ALL BURIED FITTINGS FOR PIPE INCLUDING TEES, BENDS, CAPS AND REDUCERS TO BE MJ COMPLETE WITH RESTRAINED JOINTS.
- 25 MP CONCRETE THRUST BLOCKS ARE REQUIRED AT ALL TEES, BENDS, AND CAPS. BLOCKS SHALL NOT BE FORMED UNTIL THE BEARING FOUNDATION HAS BEEN OBSERVED BY DEPT. REPRESENTATIVE.
- THRUST RESTRAINT IN ACCORDANCE WITH HALIFAX WATER STANDARD DRAWINGS 1070, 1080 AND 1090.

- HYDRANTS AND VALVES:
 - HYDRANTS TO BE PROVIDED IN ACCORDANCE WITH HALIFAX WATER STANDARD DETAIL HWSO-1110 AT 700mm OFFSET FROM FACE OF CURB.
 - PAINT HYDRANTS IN ACCORDANCE WITH HALIFAX WATER STANDARDS.
 - PROVIDE VALVES IN ACCORDANCE WITH HALIFAX WATER CRITERIA:
 - GATE VALVES: 300mm DIA. AND SMALLER
 - BUTTERFLY VALVES: 350 mm DIA. AND LARGER
 - INSTALLED IN ACCORDANCE WITH HALIFAX WATER STANDARD DETAIL HWSO-1032
 - LOCATIONS OF HYDRANTS AND VALVES ARE APPROXIMATE ONLY AND SHALL BE CONFIRMED ON-SITE.

REINSTATEMENT, SIGNAGE AND PAVEMENT MARKINGS

- LANDSCAPING:
 - PROVIDE 150 MM TOPSOIL AND SOD AS INDICATED. ALL OTHER DISTURBED AREAS, PROVIDE 150 MM TOPSOIL AND HYDROSEED.
 - PROVIDE TREES AT 25M SPACING IN ACCORDANCE WITH HALIFAX STANDARD DETAIL HRM 86. EXACT LOCATIONS TO BE DETERMINED ON-SITE.
 - PROVIDE GUIDERAIL IN ACCORDANCE WITH HALIFAX STANDARD DETAIL HRM 36.
- SIGNAGE:
 - EXISTING TRAFFIC SIGNS SHALL BE REMOVED AND RELOCATED ON NEW BASES WHERE REQUIRED AT THE DIRECTION OF DEPT. REPRESENTATIVE.
 - PROVIDE NEW SIGN BASES IN ACCORDANCE WITH HALIFAX STANDARD DETAIL HRM 38 - URBAN TRAFFIC SIGN POST.
- PAVEMENT MARKINGS SHOWN ARE APPROXIMATE AND SHALL BE CONFIRMED ON SITE WITH DEPT. REPRESENTATIVE. ALL TRAFFIC MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND HALIFAX STANDARD DRAWINGS
 - HRM 90 - LONGITUDINAL AND TRANSVERSE MARKINGS
 - HRM 91- PAVEMENT ARROWS
 - HRM 93 - PEDESTRIAN PAVEMENT MARKINGS

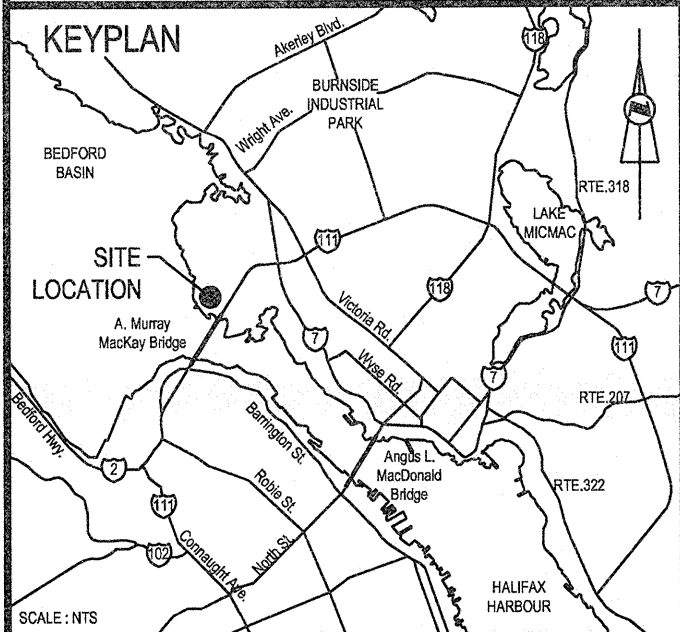
EROSION AND SEDIMENT CONTROL

- CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS REQUIRED TO PERFORM WORKS AND TO COMPLY WITH ALL PERMIT REQUIREMENTS AND CONDITIONS.
- CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF NATURAL WATERCOURSES FROM DAMAGE DUE TO SILTATION AND DELETERIOUS RUNOFF FROM CONSTRUCTION SITES AND DEWATERING PROCEDURES.
- ALL MATERIALS AND EQUIPMENT SHOULD BE STORED AND OPERATED IN A MANNER THAT PREVENTS ANY DELETERIOUS SUBSTANCE FROM ENTERING THE WATER.
- DO NOT PUMP, DRAIN OR PERMIT WATER CONTAINING SUSPENDED MATERIALS TO ENTER INTO WATERWAYS OR SEWERS.
- PRIOR TO CARRYING OUT WORK, CHECK LONG RANGE WEATHER FORECAST TO ENSURE THAT THERE IS ADEQUATE TIME BEFORE FORECAST OF HEAVY RAIN STORMS TO STABILIZE THE WORK SITE.
- PROTECT ALL REMAINING VEGETATION FROM DAMAGE.
- RIP RAP IS TO BE NON-ORE BEARING, NON-TOXIC TO AQUATIC LIFE, SPECIALLY SELECTED AND GRADED QUARRY STONE WITH ANGULAR SHAPE AND FREE FROM ROUNDED, FLAT OR ELONGATED PARTICLES. SIZED TO MEET THE SPECIFICATIONS FOR HAND PLACED RIP RAP UNLESS OTHERWISE NOTED.
- PLACE EROSION AND SEDIMENT CONTROL DEVICES AS INDICATED ON THE DRAWINGS BEFORE GRUBBING THE RELATED WORK AREA. CONTROL MEASURES IN ACCORDANCE WITH PROVINCE OF NOVA SCOTIA STANDARDS AND NATIONAL GUIDE TO EROSION AND SEDIMENT CONTROL ON ROADWAY PROJECTS - TRANSPORTATION ASSOCIATION OF CANADA.
- COVER SOIL STOCKPILES WITH PLASTIC OR APPROVED EQUAL WHEN SO DIRECTED.
- AS A MINIMUM REQUIREMENT, SILT FENCE IS TO BE INSTALLED WHERE INDICATED ON THE PLANS BEFORE GRUBBING OR PLACING FILL.
- EXCAVATE SWALES IN ALL AREAS AT THE EARLIEST PRACTICAL TIME IN THE CONSTRUCTION SEQUENCE TO PREVENT WATER FROM UPSTREAM AREAS FROM FLOWING ACROSS EXPOSED SOIL.
- ALL AREAS EXPOSED DURING CONSTRUCTION, INCLUDING CONTROL STRUCTURES SUCH AS BERMS, SWALES, DITCHES, ETC., SHALL BE STABILIZED IMMEDIATELY.
- PROTECT DISTURBED SOIL AREAS ON THE BANKS AND AREAS ADJACENT WATER FEATURES FROM SURFACE EROSION BY EITHER HYDROSEEDING WITH A HEAVY MULCH, TACKIFIER, SEED MIX, BY INSTALLING EROSION BLANKETS AND / OR BY HEAVILY REVEGETATING.
- CONTRACTOR TO PLANT NATIVE TREES, SHRUBS AND HERBACEOUS PLANTS WHICH ARE APPROPRIATE TO THE SITE CONDITIONS TO REVEGETATE AND REPLACE RIPARIAN VEGETATION.
- THE FLOW CHANNEL OF ALL PERMANENT OR TEMPORARY DIVERSION DITCHES AND SWALES SHALL BE STABILIZED IMMEDIATELY UPON FINAL GRADING.
- MAINTAIN QUANTITY OF APPROPRIATE EROSION AND ENVIRONMENTAL PROTECTION MATERIALS (E.G. SILT FENCES, HAY BALES, WOOD CHIPS, AND TYPE 1 GRAVEL) ON SITE AT ALL TIMES.
- MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES FROM TIME OF INSTALLATION UNTIL AFTER ALL ADJACENT DRAINAGE AREAS HAVE BEEN STABILIZED.

- ALTHOUGH NOT ENCOUNTERED DURING SITE INVESTIGATIONS THE PRESENCE OF SURPLUS SLATE OR SHALE MATERIAL IN AREAS OF EXCAVATION SHALL BE IDENTIFIED TO THE DEPARTMENTAL REPRESENTATIVE. OBTAIN DIRECTION AND APPROVAL FROM THE DEPARTMENTAL REPRESENTATIVE PRIOR TO ANY DISTURBANCE OF IN-SITU MATERIAL. IN INTERIM PERIOD, MINIMIZE MATERIAL EXPOSURE TO ELEMENTS AND DIVERT RUN-OFF AWAY FROM AREAS OF CONCERN.
- THE CONTRACTOR SHALL CONTROL WORK TO A MINIMUM AREA, COMPLETE PROMPTLY AND STABILIZE THE SURFACE BEFORE GOING ON TO THE NEXT AREA.
- ANY DISTURBED AREAS WHICH MAY BE REWORKED SHALL BE STABILIZED USING APPROVED METHODS WITHIN TWO WEEKS OF THE DISTURBANCE OR BEFORE A FORECAST OF A SIGNIFICANT RAINFALL EVENT. MAINTAIN IN PLACE UNTIL PLACEMENT OF PERMANENT STABILIZATION OR LANDSCAPING.
- EXCAVATE HIGH SIDED CUTOFF DITCHES AS NECESSARY AT THE EARLIEST PRACTICAL TIME IN THE CONSTRUCTION SEQUENCE TO PREVENT WATER FROM UPSTREAM AREAS FROM FLOWING ACROSS EXPOSED SOIL.
- INSTALL ADDITIONAL PROTECTION BERMS, SILT FENCE, CUTOFF DITCHES, ETC., AS REQUIRED BY SITE CONDITIONS TO PREVENT SEDIMENT FROM ENTERING WATER COURSES, DRAINAGE COURSES OR SEWERS.
- REMOVE SILT ACCUMULATIONS AT SILT FENCES AND OTHER PROTECTION DEVICES BY CAREFUL HAND EXCAVATION. DISPOSE OF ACCUMULATED SILT BY REMOVING FROM SITE.
- INSPECT EROSION AND SEDIMENT CONTROL MEASURES ON A REGULAR BASIS, DAILY AND MAINTAIN AS NECESSARY.
- WHEN DEWATERING OF CONSTRUCTION AREA IS REQUIRED, ONLY CLEAN WATER MAY BE DISCHARGED DIRECTLY TO A DRAINAGE FEATURE. DEWATERING OF EXCAVATIONS SHALL BE DIRECTED THROUGH GRAVEL BERMS. DO NOT PUMP OR DRAIN WATER CONTAINING SUSPENDED MATERIALS INTO WATERWAYS OR SEWERS.
- CLEAN EXISTING ACCESS ROADS REGULARLY TO REMOVE ANY MUD THAT MAY BE TRACKED OFF SITE BY THE CONSTRUCTION EQUIPMENT.
- MINIMIZE THE DISTURBANCE TO EXISTING VEGETATION AND REINSTATE ALL DISTURBED REMAINING VEGETATION.
- HAVE PERSONNEL ON CALL TO PROVIDE EMERGENCY REPAIRS TO EROSION AND SEDIMENT CONTROL MEASURES AT ALL TIMES.
- REFUELLING OF EQUIPMENT MUST TAKE PLACE WITHIN A CONTROLLED AREA AT LEAST 30m FROM ANY DRAINAGE DITCH, WATERWAY OR OTHER SENSITIVE RECEPTORS.
- FOR PROTECTION / CONTAINMENT OF HYDROCARBON SPILLS INTO THE WATERWAY, HYDROPHOBIC BOOMS OR SOCKS SHOULD BE PLACED ON THE WATER WHEN EQUIPMENT IS OPERATING NEAR OR IN THE WATERWAY.
- PREPARE AN EROSION AND SEDIMENTATION CONTROL PLAN IN ACCORDANCE WITH THE SPECIFICATIONS. CONTROL MEASURES AS SHOWN ON THE CONTRACT DRAWINGS TO BE INSTALLED AS A MINIMUM REQUIREMENT.

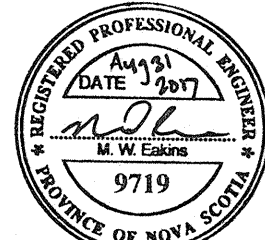
GAS UTILITIES

- CALL HERITAGE GAS TO OBTAIN VALID LOCATES PRIOR TO ANY CONSTRUCTION WORK, THEY REQUEST 48 HOUR NOTICE.
- MAINTAIN A MINIMUM OF 1M HORIZONTAL CLEARANCE AND 300MM VERTICAL SEPARATION BETWEEN EXISTING GAS LINES AND NEW SERVICES. WHERE MINIMUM SEPARATION CANNOT BE ACHIEVED PROVIDE A 7m X 7m STEEL PLATE 500mm FROM GAS LINE TO ACT AS STRUCTURAL SEPARATION BETWEEN SERVICES.
- A CROSSING CHECKLIST WILL ALSO BE REQUIRED TO ACCOMPANY THE LOCATE PAPERWORK FOR AN ACTIVITY WITHIN 1m OF THEIR LINES.
- NO EQUIPMENT WITHIN 1m OF HERITAGE GAS INFRASTRUCTURE UNLESS THE LINE IS HAND EXPOSED OR HYDROVACED, THEN NO MECHANICAL EQUIPMENT WITHIN 300mm OF HERITAGE GAS LINES AT ANY TIME.
- WHEN COMPLETING CURB WORK ETC, USE WOOD STAKES AND INSTALL AWAY FROM LINES. IF WITHIN 1m OF LINES EXPOSE TO ENSURE LOCATION PRIOR TO COMMENCING WORK.
- PROTECT AND COVER EXPOSED GAS LINES.



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revisions		date

project

BEDFORD INSTITUTE OF OCEANOGRAPHY
DARTMOUTH, NS

SECOND ACCESS ROAD

drawing

LEGEND AND GENERAL NOTES

designed JG

date

drawn DPB

date

approved AGM

date

Tender

PWGSC Project Manager

project number

R.073592.001

drawing no.

C2