

STRUCTURAL NOTES

GENERAL

1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS BEFORE BEGINNING WORK AND SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
2. NOTES & DETAILS ON THE PLANS SHALL TAKE PRECEDENCE OVER DETAILS ON THE TYPICAL DETAIL SHEETS.
3. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CONSTRUCTION SPECIFICATIONS.
4. PROVIDE ADEQUATE SHORING OR BRACING DURING CONSTRUCTION TO RESIST FORCES SUCH AS WIND AND UNBALANCED LOADING DUE TO CONSTRUCTION.

REINFORCED CONCRETE

1. REINFORCEMENT DETAILS SHALL CONFORM TO THE REQUIREMENTS OF "THE ACI MANUAL OF STANDARD PRACTICE (ACI 315)". SPLICES AND EMBEDMENT LENGTHS NOT GIVEN ON THE CONTRACT DRAWINGS SHALL BE PRESUMED TO BE IN TENSION AND SHALL CONFORM TO THOSE REQUIREMENTS. UNLESS OTHERWISE SHOWN SPLICES SHALL BE CLASS "B" TENSION LAP SPLICES AS DEFINED IN ACI 318M.
2. MINIMUM CLEAR CONCRETE COVER FOR REINFORCING BARS, UNLESS SHOWN OTHERWISE SHALL BE 76mm WHEN CAST AGAINST EARTH AND 51mm WHEN NOT CAST AGAINST EARTH.
3. SPACING OF REINFORCING BARS SHOWN ON THE DRAWINGS SHALL BE A MAXIMUM.
4. EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 19mm BY 19mm UNLESS NOTED OTHERWISE.
5. CONSTRUCTION JOINTS AND REINFORCING STEEL BAR SPLICES SHALL BE WHERE SHOWN ON DRAWINGS. OPTIONAL CONSTRUCTION JOINTS MAY BE PROPOSED BY THE CONTRACTOR SUBJECT TO REVIEW AND APPROVAL BY THE STRUCTURAL ENGINEER.
6. REINFORCING BARS SHALL CONFORM TO THE REQUIREMENTS ASTM A615, GRADE 60.
7. ALL MECHANICAL EQUIPMENT, PIPES & OPENING SIZES AND LOCATIONS SHALL BE VERIFIED PRIOR TO PLACING CONCRETE.
8. ALL JOINTS SHALL HAVE WATERSTOPS WHERE WATERTIGHT INTEGRITY IS REQUIRED.
9. ALL FILL CONCRETE SHALL MEET THE REQUIREMENTS OF MnDOT CLASS 3A GROUT.
10. ALL BENT DOWELS TO STANDARD UNLESS OTHERWISE NOTED.

STEEL

1. ALL STRUCTURAL STEEL SHALL BE ASTM A36, UNLESS NOTED OTHERWISE. WELDING ELECTRODES SHALL BE E70 SERIES FOR A36 STEEL.

ALUMINUM

1. ALUMINUM STRUCTURAL MEMBERS SHALL BE 6061-T6 ALLOY. ALL WELDING SHALL BE DONE WITH FILLER WIRE 4043.
2. ISOLATE ALL ALUMINUM FABRICATIONS FROM CONTACT WITH CONCRETE WITH 2 HEAVY COATS OF BITUMASTIC.

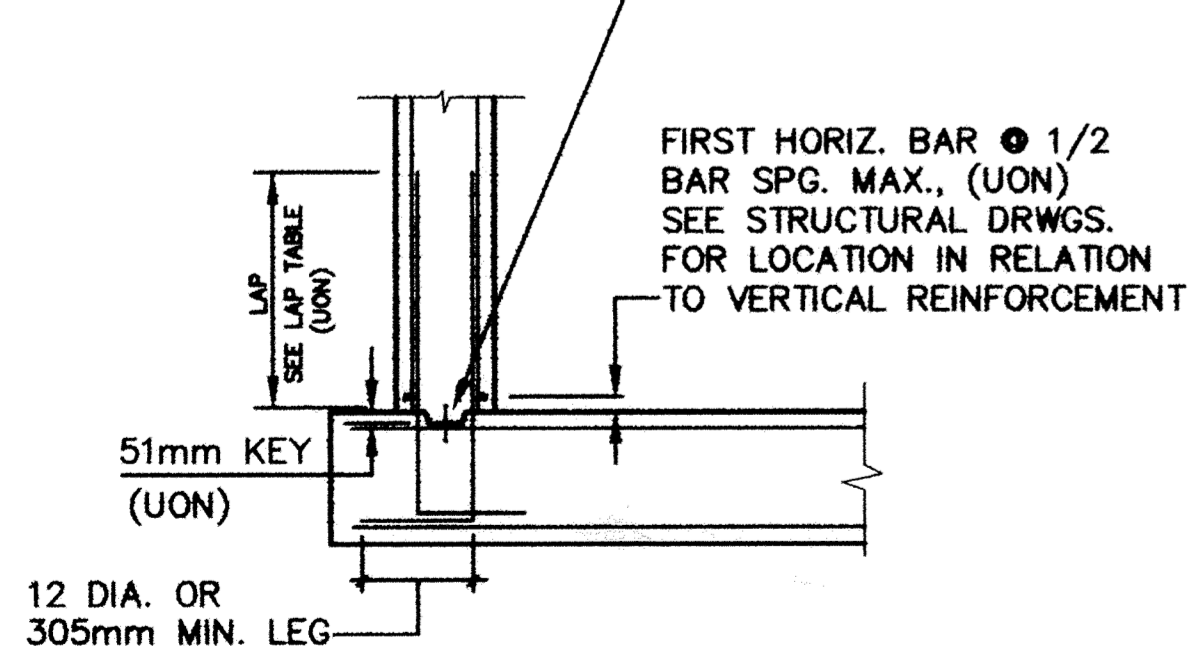
EARTHWORK / FOUNDATIONS

1. ALL FOOTINGS SHALL BEAR ON COMPACTED GRANULAR FILL. ALL FOOTINGS ARE DESIGNED USING AN ALLOWABLE SOIL BEARING PRESSURE OF 0.45 MPa (UON). THE SOILS ENGINEER SHALL CONFIRM THESE BEARING VALUES AT THE TIME OF EXCAVATION. ALL BELOW-GRADE WALLS ARE DESIGNED ASSUMING FREE DRAINING GRANULAR BACKFILL WITH AN EQUIVALENT FLUID PRESSURE OF 722 kg/M ABOVE THE WATER TABLE AND 1284 kg/M³ BELOW THE WATER TABLE (SEE SOILS REPORT).

SEE STRUCT. DRWGS. FOR REINF. SIZE, SPACING AND LOCATION.

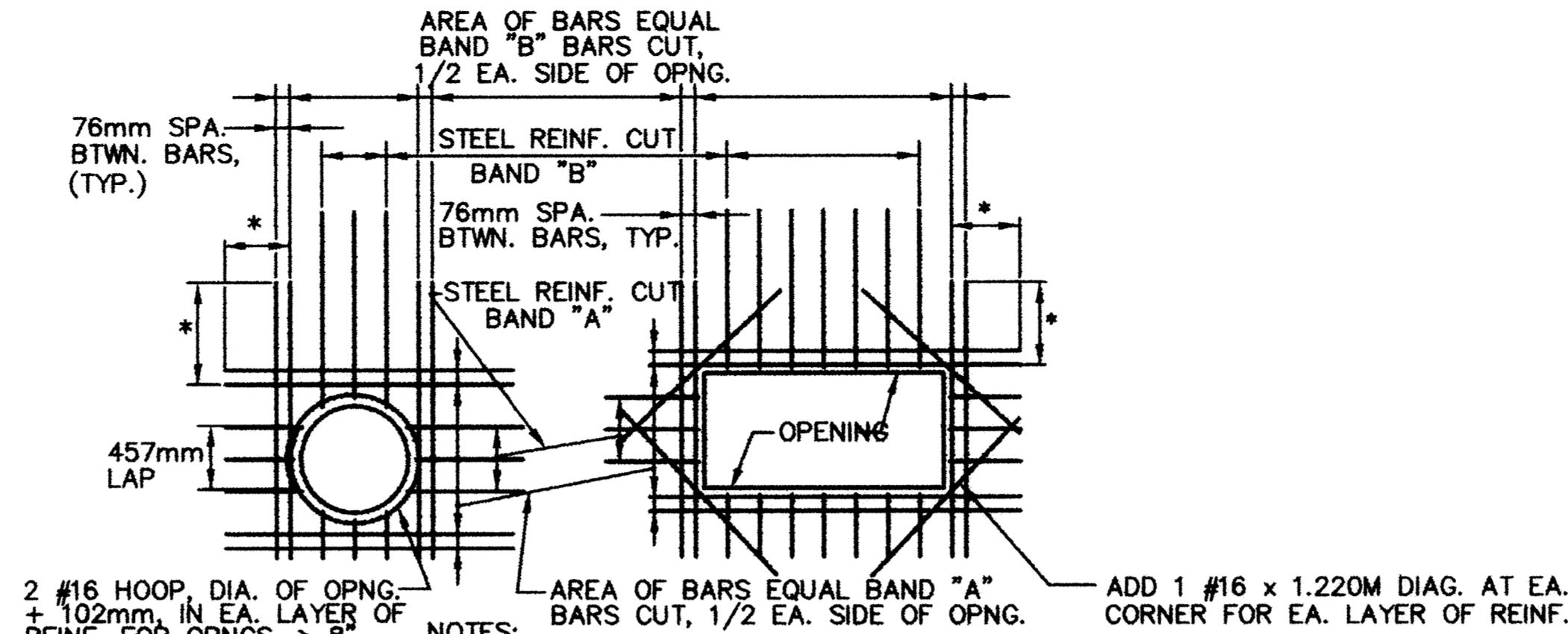
PREPARE JOINT FACE AS BONDED JOINT.

152mm CENTER BULB WATERSTOP (UON) SECURELY TIE WATERSTOP, BOTH ENDS, TO REINF. - TIES SHALL NOT EXCEED 305mm O.C., EACH SIDE.



4 FIXED WALL TO BASE SLAB CONSTRUCTION JOINT

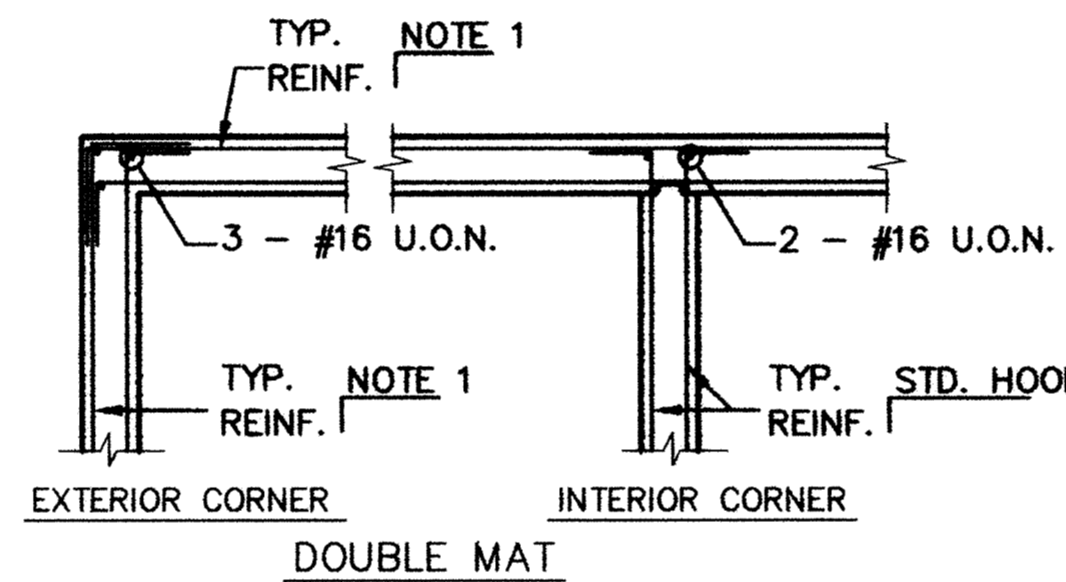
SCALE: NONE



1 OPENING REINFORCING DETAIL

SCALE: NONE

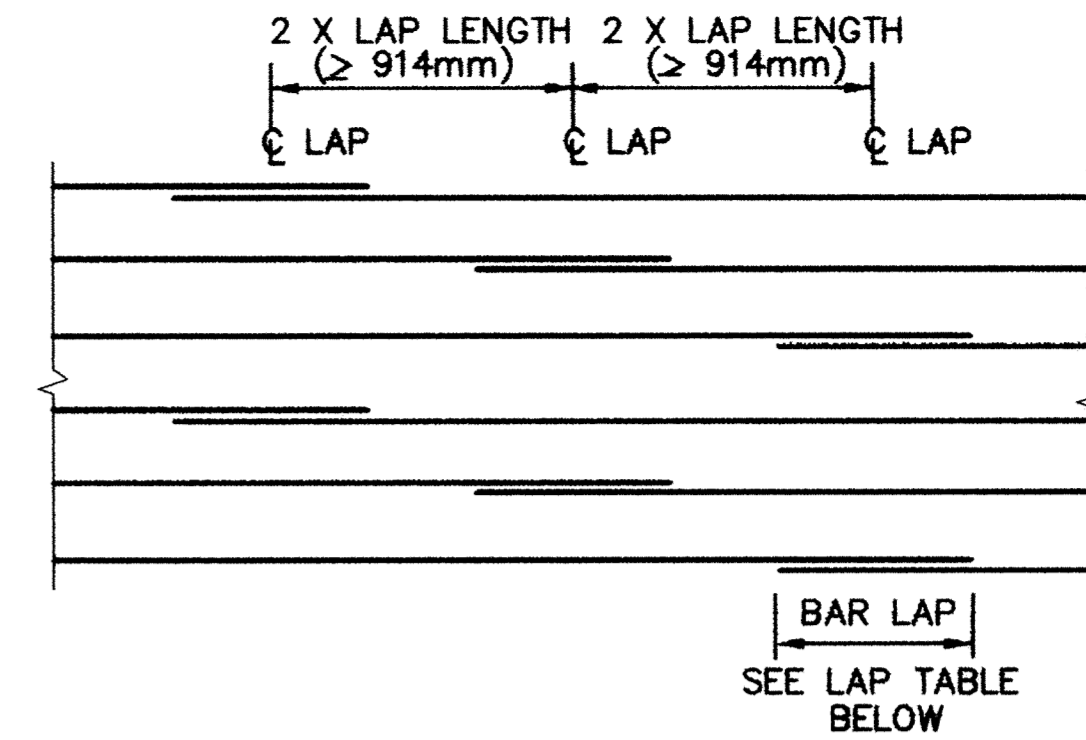
1. *42 BAR DIAMETERS UNLESS NOTED OTHERWISE ON PLANS.
2. DO NOT WELD REINF. TO PIPE SLEEVES AND INSERTS.
3. TYP. FOR ALL OPNGS. IN CONC. WALLS AND SLABS UNLESS INDICATED OTHERWISE ON PLANS.



3 CONCRETE WALL CORNER DETAIL

SCALE: NONE

1. 90° HOOK SHALL BE OF SUFFICIENT LENGTH TO PROVIDE THE HORIZONTAL BAR LAP LENGTH SHOWN IN THE SPLICE LAP TABLE AT RIGHT.
2. TYP. FOR ALL CORNERS UNLESS OTHERWISE SHOWN ON THE PLANS.



2 HORIZONTAL STAGGERED BAR LAP DETAIL

SCALE: NONE

REINFORCING BAR LAP TABLE

BAR SIZE	MINIMUM BAR LAP LENGTH	
	TOP BARS	OTHER BARS
#10	593mm	456mm
#13	793mm	610mm
#16	992mm	763mm
#19	1192mm	917mm
#22	1732mm	1332mm
#25	1981mm	1524mm
#29	2239mm	1722mm

NOTES:

1. LAPS SHOWN ARE BASED ON $f'_c = 28 \text{ MPa}$, NORMAL WEIGHT CONCRETE, LAP CLASS B AND UNCOATED REINFORCEMENT WITH COVER $\geq 51\text{mm}$ AND CLEAR BAR SPACING $> 102\text{mm}$ O.C. FOR ALL OTHER CONDITIONS, PROVIDE BAR LAP LENGTH AS REQUIRED BY A.C.I. 318M-95.
2. TOP BARS REFERED TO IN THE TABLE ABOVE ARE HORIZONTAL BARS WITH $\geq 311\text{mm}$ OF CONCRETE CAST BELOW THE BAR. HORIZ. BARS IN WALLS SHALL REQUIRE LAPS AS INDICATED FOR TOP BARS.
3. ALL BAR LAPS SHALL BE CONTACT SPLICES UNLESS OTHERWISE NOTED.
4. USE LAP LENGTH FOR THE SMALLER BAR WHEN LAPPING DIFFERENT SIZE BARS.
5. ALL REINFORCING BAR LAP LENGTHS SHALL BE AS SHOWN IN THE TABLE ABOVE UNLESS OTHERWISE NOTED.

DESIGNED BY: SPL,BL,BEL JOB DATE: 8-11-98
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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A FULLY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 DATE: 10/9/98 REG. NO.: 13970

NO.	DATE	BY	REVISION DESCRIPTION

1326 ENERGY PARK DRIVE
 ST. PAUL, MINNESOTA 55108
 (612) 644-4389
Howard R. Green Company
 CONSULTING ENGINEERS

CITY OF ELK RIVER
LIFT STATION

STRUCTURAL NOTES

SHEET NO.
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