## STRUCTURAL ABBREVIATIONS

DDL	
Minimary	
NSUL	
Angle	
PRROX	
STM	
March   Mar	
VC	
KO   Knockout	
AL         Bolance         LAM         Lominate/Lamination           F         Bock Face         LG         Long/Length           R         Bose Plate         LWGT         Light Weight           SMT         Bosement         LIN         Linea/Linear           M         Bearing         LD         LIVe         Load           RG         Bearing         LD         BRG         Load Bearing           RG         Bearing Plate         LOC         Location           TWN         Between         LLH         Long Leg Horizontal           TUM         Bituminous         LLV         Long Leg Horizontal           LK         Brock         LONGIT         Longitudinal           LK         Brock         MRR         Manufacturer           LK         Brock         MRR         Manufacturer           LK	
Back Face	
R         Base Plate         LWGT         Light Weight           SMT         Basement         LIN         Lineal/Linear           M         Bearing         LD BRG         Load Bearing           RG         Bearing Plate         LOC         Load Bearing           TWN         Between         LLH         Long Leg Horizontol           TUM         Bituminous         LLV         Long Leg Vertical           LK         Block         LONGIT         Longitudinal           LK         Blocking         LP         Low Point           DBM         Bond Beam         F         Low Point           DT         Bottom         MFR         Mountaine           DT         Bottom         MFR         Mountaine           PE         Bottom of Footing Elevation         MAS         Massonry           PE         Bottom of Footing Elevation         MAS         Massonry Opening           RCG         Bracing         MAT         Material           RKT         Brocket         MAX         Moximum           RCG         Bracing         MAT         Material           RCR         Bridging         MED         Mechanical           RCR         <	
M         Beam or Bench Mark         LL         Live Load           RG         Bearing         LD BRG         Load Bearing           RG €         Bearing Plate         LOC         Location           TWN         Between         LLH         Long Leg Horizontal           TUM         Bituminous         LLV         Long Leg Vertical           LK         Block         LONGIT         Longitudinal           LK         Blocking         LP         Low Point           D BM         Bond Beam         Both         LP         Low Point           D BM         Bond Beam         MFR         Manufacturer           DT         Bottom of Footing Elevation         MK         Mark           EE         Bottom of Footing Elevation         MAS         Masonry Opening           RCG         Bracket         MAX         Masimum           RCG         Bracket         MAX         Maximum           RCG         Bracket         MAX         Maximum           RCH         Bridging         MED         Medium           RDG         Bridging         MED         Medium           RDG         Bridging         MED         Medium           RDG	
RG         Bearing         LD BRG         Load Bearing           RG P         Bearing Plate         LOC         Location           TWN         Between         LLH         Long Leg Horizontal           TUM         Bituminous         LLV         Long Leg Vertical           LK         Block         LONGT         Longitudinal           LK         Blocking         LP         Low Point           LK         Blocking         MFR         Monufacturer           DT         Bottom         MK         Mork           DT         Bottom of Flote Elevation         MC         Masonry           PE         Bottom of Plate Elevation         MO         Masonry Opening           RCG         Bracing         MATL         Material           RCG         Bracing         MATL         Material           RCK         Bridging         MECH         Mechanical           RCH         By Bridging         MED         Medium           LDG         Building	
Ref. R	
TUM	
Block	
LKG         Blocking         LP         Low Point           D BM         Bond Beam         Both Sides         MFR         Manufacturer           DT         Bottom         MK         Mark           DT         Bottom of Footing Elevation         MAS         Masonry           PE         Bottom of Plate Elevation         MO         Masonry Opening           RCG         Bracing         MATL         Material           RKT         Bracket         MECH         Mechanical           RRK         Bridging         MECH         Mechanical           RDG         Bridging         MED         Medium           LDG         Building         MH         Manhole           By         MTL         Metal           BY         MEZZ         Mezzanine           PTY         Capacity         MID         Middle           PTY         Capacity         MID         Middle           PTY         Capacity         MID         Miscellaneous           Center         MISC         Miscellaneous           Center to Center         MTR         Mortar           Channel         MTR         Mortar           DC         Composite <td></td>	
S	
MK	
FE Bottom of Footing Elevation MAS Masonry PE Bottom of Plate Elevation MO Mosorry Opening RCG Bracing MATL Material RKT Bracket MAX Maximum RKK Brick MECH Mechanical RDG Bruding MED Medium LDG Bruding MH Manhole By MTL Metal PTY Capacity MID Middle PTY Capacity MID Middle PTY Cast in Place MIN Minimum RR Center MISC Miscellaneous Centerline MOD Module/Modular Center to Center MITR Mortar Channel MTR Mortar Channel MTD Mounted LR Clear/Clearance DL Column NS Near Side DMP Concrete Masonry Unit NIC Not in Contract DNN Connection NTS Not to Scale DNSTR Construction Joint DNT Continuous OC Maximum DNA Maximum MATD Mounted DNA Mosonry Unit NIC Not in Contract DNSTR Construction Joint Joint DNSTR Construction Joint Joint DNSTR Construction Joint	
PE Bottom of Plate Elevation MO Masonry Opening RCG Bracing MATL Material RRT Bracket MAX Maximum RK Brick MECH Mechanical RDG Bridging MED Medium LDG Building MH Manhole By MTL Metal PTY Capacity MID Middle P Cast in Place MIN Minimum RTR Center MISC Miscellaneous Centerline MOD Module/Modular MCC Center to Center MTR Mortar Channel MD Mounted LR Clear/Clearance DL Column NS Near Side DMP Composite NOM Nominal DMC Concrete MSONY Unit NIC Not in Contract DMC Concrete MSONY Unit NIC Not in Contract DNN Connection NO # Number DNSTR Construction Joint	
RKT Bracket MAX Maximum RKK Brick MECH Mechanical RDG Bridging MED Medium LDG Building MH Manhole By MTL Metal MEZZ Mezzanine PTY Capacity MID Middle P Cast in Place MIN Minimum TR Center MISC Miscellaneous Centerline MOD Module/Modular  /C Center to Center Channel MTD Mounted LR Clear/Clearance OL Column NS Near Side OMP Composite NOM Nominal ONC Concrete Masonry Unit NIC Not in Contract MU Concrete Masonry Unit NIC Not of Scale ONSTR Construction Joint ONSTR Construction Joint ONSTR JT Construction Joint ONT Continuous OC On Center ONT Continuous OC On Center	
RK Brick Brick MECH Mechanical RDG Bridging MED Medium LDG Building MH Manhole By MTL Metal MEZZ Mezzanine PTY Capacity MID Middle P Cast in Place MIN Minimum RTR Center MISC Miscellaneous Centerline MOD Module/Modular Centerline MOD Module/Modular MTR Mortar Channel MTR Mortar Channel MTD Mounted LR Clear/Clearance DL Column NS Near Side DMP Composite NOM Nominal DNC Concrete MASONNY Nominal DNC Concrete Masonry Unit NIC Not in Contract MISC Not in Contract NONN Connection NO or # Number DNSTR Construction Joint DNSTR JT Construction Joint DNT Continuous OC On Center	•
RDG Bridging MED Medium LDG Building MH Manhole By MTL Metal MEZZ Mezzanine PTY Capacity MID Middle P Cast in Place MIN Minimum TR Center Center Center MISC Miscellaneous Centerline MOD Module/Modular Center to Center MIR Mortar Channel MTR Mortar Channel MTD Mounted  LR Clear/Clearance DL Column NS Near Side DMP Composite NOM Nominal DNC Concrete Masonry Unit NIC Not in Contract MISC Miscellaneous MISC Miscellaneous MISC Miscellaneous MISC Miscellaneous MISC Module/Modular MIR Mortar MOD Mounted MIR Mortar MIR	•
By MTL Metal MEZZ Mezzanine  PTY Capacity MID Middle  P Cast in Place MIN Minimum  TR Center MISC Miscellaneous  Centerline MOD Module/Modular  /C Center to Center MTR Mortar  Channel MTD Mounted  LR Clear/Clearance  OL Column NS Near Side  OMP Composite NOM Nominal  ONC Concrete Masonry Unit NIC Not in Contract  ONN Connection NTS Not to Scale  ONSTR Construction Joint  ONSTR JT Construction Joint  ONT Continuous  OC On Center  MEZZ Mezzanine  MID Middle  Middle  MID Middle  Minmum  Minmum  Minmum  Misc Miscellaneous  Module/Modular  Mortar  Mortar  Montar  Montar  Montar  Mounted  Non Near Side  Nominal  Not Applicable  Not in Contract  Not in Contract  Not in Contract  Not o Scale  ONSTR JT Construction Joint  ONT On Center	•
MEZZ Mezzanine  PTY Capacity MID Middle  P Cast in Place MIN Minimum  TR Center MISC Miscellaneous  Centerline MOD Module/Modular  /C Center to Center MTR Mortar  Channel MTD Mounted  LR Clear/Clearance  OL Column NS Near Side  OMP Composite NOM Nominal  ONC Concrete Masonry Unit NIC Not in Contract  ONN Connection NTS Not to Scale  ONSTR Construction Joint  ONSTR JT Construction Joint  ONT Continuous  MEZZ Mezzanine  MID Middle  MID Middle  MIN Minimum  MIN Minimum  MIN Monimum  MISC Miscellaneous  MOD Module/Modular  MTR Mortar  MOD Mounted  MOD Mounted  NEar Side  NOM Nominal  Nominal  Not Applicable  Not in Contract  Not in Contract  Not to Scale  No or # Number  ONSTR JT Construction Joint  ON Continuous	•
PTY Capacity P Cast in Place MIN Minimum TR Center CenterIne MOD Module/Modular MTR Mortar Channel MTD Mounted  Clear/Clearance OL Column MOD Mounted  Concrete MTD Mounted  MOUNT Confered MOUNT MOUNTED  MTD MOUNTED  MTD MOUNTED  MOUNTED  MOUNTED  MTD MOUNTED  MOUNTED  MOUNTED  MOUNTED  MOUNTED  MTD MOUNTED	•
TR Center	•
Centerline MOD Module/Modular  /C Center to Center Channel MTD Mounted  LR Clear/Clearance  OL Column NS Near Side  OMP Composite NOM Nominal  ONC Concrete Masonry Unit NIC Not in Contract  ONN Connection NTS Not to Scale  ONSTR Construction Joint  ONT Continuous OC On Center	1
/CCenter to Center Channel ChannelMTDMortar MountedLRClear/ClearanceOLColumnNSNear SideOMPCompositeNOMNominalONCConcreteNANot ApplicableMUConcrete Masonry UnitNICNot in ContractONNConnectionNTSNot to ScaleONSTRConstructionNO or #NumberONSTR JTConstruction JointONTContinuousOCOn Center	•
Channel LR Clear/Clearance OL Column OMP Composite ONC Concrete MU Concrete Masonry Unit ONN Connection ONSTR JT Construction Joint ONT Continuous  MTD Mounted MOUNT MODINAL NS Mounted NOM Near Side NOM Nominal NOM Nominal NOM Nominal NOM Nominal NOM Not Applicable NOM Not in Contract NTS Not to Scale NOM Number ON F Number ON Confinuous OC On Center	,
OL Column OMP Composite OMP Concrete ONC Concrete MU Concrete Masonry Unit ONN Connection ONSTR Construction ONSTR JT Construction Joint ONT Continuous ONT Continuous ONSTR STR Construction ONT Continuous ONSTR ON Continuous ONSTR ON CONTINUOUS ON CONTINUOUS NO MAN No Manual	1
OMP Composite NOM Nominal ONC Concrete NA Not Applicable MU Concrete Masonry Unit NIC Not in Contract ONN Connection NTS Not to Scale ONSTR Construction NO or # Number ONSTR JT Construction Joint ONT Continuous OC On Center	1
ONC Concrete MU Concrete Masonry Unit ONN Connection ONSTR Construction ONSTR JT Construction ONT Continuous ONT Continuous  NA Not Applicable Not in Contract NTS Not to Scale NO or # Number ON # Number ON Continuous ON Continuous ON Content	1
ONN Connection NTS Not to Scale ONSTR Construction NO or # Number ONSTR JT Construction Joint ONT Continuous OC On Center	
ONSTR Construction NO or # Number ONSTR JT Construction Joint ONT Continuous OC On Center	
ONSTR JT Construction Joint ONT Continuous OC On Center	
AND CONTRACTOR OF THE CONTRACT	
J Control Joint OPP Opposite	
OORD Coordinate O/O Out to Out	
OD Outside Diameter  Dead Load OF Outside Face	
Dead Load OF Outside Face EG Degree OH Overhead	
EMO Demolition	
ET Detail PNL Panel	
AG Diagonal PAR Parallel A or Ø Diameter PERP Perpendicular	
M Dimension PT Point	
P Ductile Iron Pipe PL Plate	
BL PREF Preformed T Double Tee LB Pound/Pounds	
WL Dowel PSF Pounds per Square Foot	
N Down PSI Pounds per Square Inch	
RWG Drawing P.T. Pressure Treated PROC Process	
A Each PROU Process  PROU Process  PROJ Projection	
E Each End PVC Polyvinyl Chloride	
Each Face	
S Each Side QTY Quantity W Each Way QUAD Quadrant	
LEC Electrical	
Elevation R Radius	
MB Embedment REF Reference NGR Engineer REINF Reinforcing/Reinforcement	
RCP Reinforced Concrete Pipe	
QUIP Equipment REQD Required	
KCAV Excavate REQMT Requirement	
K Existing REV Revise/Revision KP Expansion RO Rough Opening	
KP BT Expansion Bolt	
XP JT Expansion Joint SCH Schedule	
XT Exterior SECT Section SHT Sheet	
AB Fabricate(d) SIM Similar	
SP Space/Spacing	
Far Side SP Space/Spacing Foot/Feet SPEC Specification	
Far Side Foot/Feet SPEC Specification N Finish SQ Flange STAG Staggered	
Far Side Foot/Feet SPEC Specification SQ Square STAG STAG Stainless Steel (preceded by type 304,	04, 316, et
Far Side Foot/Feet SPEC Specification SQ Square STAG STAG Stangered STAG Standard Specification SQ Square STAG Standard STD Standard	04, 316, et
Far Side Foot/Feet SPEC Specification SQ Square STAG STAG Standard Specification SQ Square Staggered Staggered STAG Standard Standard STA Station	04, 316, et
Far Side Foot/Feet SPEC Specification SPEC Specification SPEC Specification SPEC Specification SQ Square STAG Staggered STAG Stainless Steel (preceded by type 304, STD Standard STA Station STA Station STA Station STL Steel STE STE STEL Steel STE STEL Steel STE STEL Steel STEL STEL STEL STEL STEL STEL STEL STEL	04, 316, et
Far Side Foot/Feet SPEC Specification SQ Square STAG Staggered STAG Stainless Steel (preceded by type 304, STAG STAG STAG STAG STAG STAG STAG STAG	04, 316, et
Far Side Foot/Feet SPEC Specification SQ Square STAG STAG Staggered STAG STAG Stainless Steel (preceded by type 304, 500) STAG STAG STAG STAG STAG STAG STAG STAG	04, 316, et
Far Side Foot/Feet SPEC Specification SQ Square STAG Staggered STAG Stainless Steel (preceded by type 304, STAG STAG STAG STAG Standard STAG STAG STAG STAG STAG STAG STAG STAG	04, 316, et
Far Side Foot/Feet Foot/Feet SPEC Specification SQ Square STAG Staggered SS Stainless Steel (preceded by type 304, SS Standard STA Station STA STA Station STA STA Station STA STA Station STA	04, 316, et
Far Side Foot/Feet SPEC Specification SQ Square STAG Staggered STAG Staggered STAG Stainless Steel (preceded by type 304, STAG STAG STAG STAG STAG STAG STAG STAG	04, 316, et
Far Side Foot/Feet Foot/Feet Foot/Feet Finish Finish Flange Floor Footing Foot	04, 316, et
Far Side Foot/Feet Foot/Feet Foot/Feet Finish Finish Floor F	04, 316, et
Far Side Foot/Feet Foot/Feet Foot/Feet Finish Finis	04, 316, et
Far Side Foot/Feet Foot/Feet Foot/Feet Finish Finish Floor Footing Footing Footing Footing Footing Framing Framing Framing Frem Floor Framing Framing Framing Framing Frem Floor Flo	04, 316, et

Top of Grout Elevation

Top of Plank Elevation

Top of Pier Elevation

Top of Slab Elevation TRANSV Transverse

TYP Typical

UNEXCAV Unexcavated Unless Otherwise Noted

Vapor Barrier VERT Vertical

UON

WGT WWM Welded Wire Mesh Wide Flange Wind Load W/O Without Working Point

Yard

## STRUCTURAL NOTES

- 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 DRAWNGS SHALL BE PRESUMÉD 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 318.
- 2. MINIMUM CLEAR CONCRETE COVER FOR REINFORCING BARS, UNLESS SHOWN OTHERWISE SHALL BE 3" WHEN CAST AGANIST EARTH AND 2" WHEN NOT CAST AGANIST EARTH.
- 3. SPACING OF REINFORCING BARS SHOWN ON THE DRAWINGS SHALL BE A MAXIMUM.
- 4. EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3/4" BY 3/4" 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 STRUCTURAL ENGINEER.
- 6. REINFORCING BARS SHALL CONFORM TO THE REQUIREMENTS ASTM A615, GRADE 60.

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE



1326 ENERGY PARK DRIVE ST. PAUL, MINNESOTA 55108 (612) 644-4389
9800 SHELARD PARKWAY MINNEAPOLIS, MINNESOTA 55441

		DATE	DESCRIPTION	DESIGNED_DLC_	7
ENERGY PARK DRIVE MINNESOTA 55108	S			CHECKED LJL	
(612) 644-4389  SHELARD PARKWAY  MINNESOTA 55441  (612) 546-0432	REVISION			DRAWN TB	١
				GRAPHIC SCALE	3
				O HORIZ. 4	
				0 VERT. 4	(

CITY OF ELK RIVER WASTEWATER TREATMENT FACILITIES STRUCTURAL NOTES & ABBREVIATIONS

SHEET 8 OF 41 SHEET

HD GALV

Horizontal

Hot Dipped Galvanized