UNIVERSAL BUSINESS CENTER

SITE DEVELOPMENT

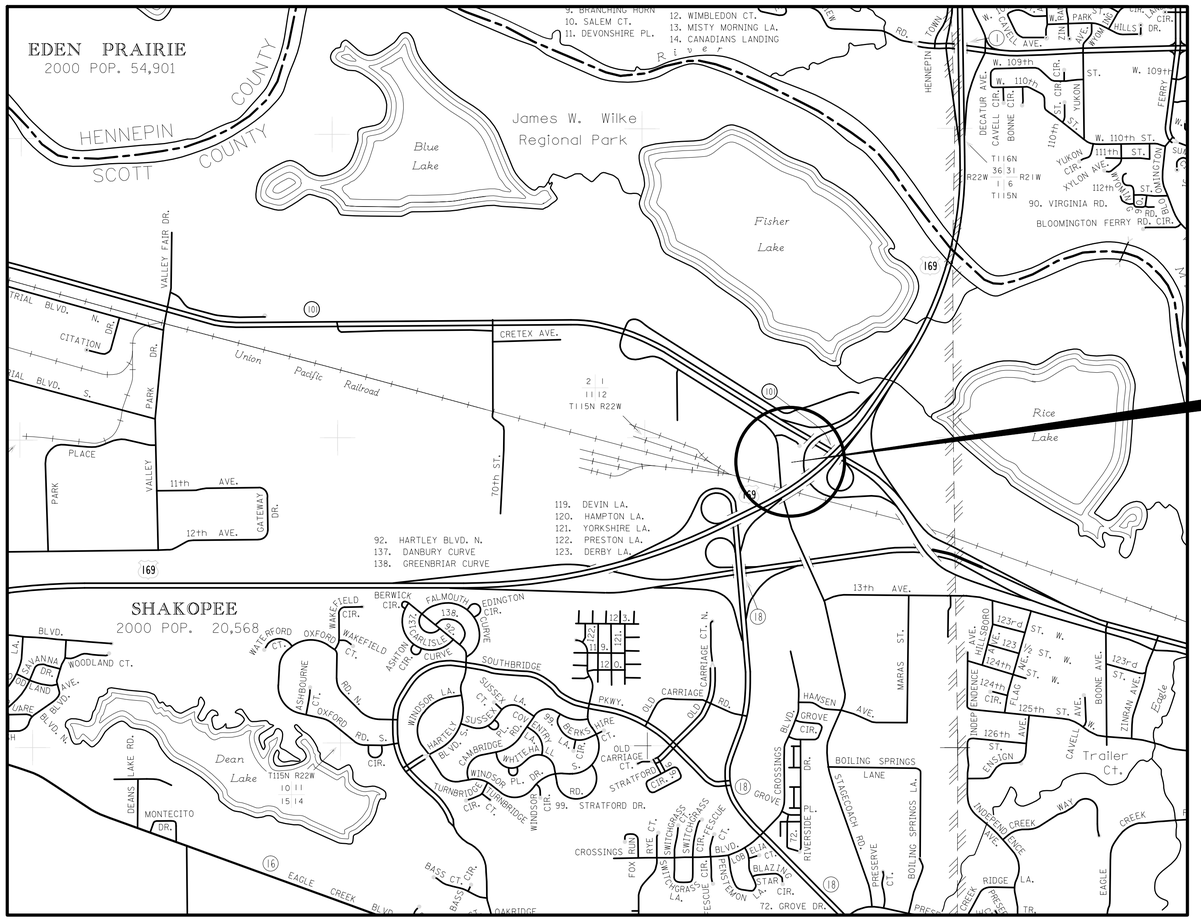
SHAKOPEE, MINNESOTA

EXISTING

- COUNTY LINE
- CITY LIMITS
- SECTION LINE
- PRESENT RIGHT OF WAY LINE
- PROPERTY/LOTLINE
- PERPETUAL EASEMENT
- ZONING SETBACK LINE
- ACCESS CONTROL LINE
- RAILROAD RIGHT OF WAY LINE
- RAILROAD
- WATER EDGE
- WETLAND BOUNDARY
- WETLAND/MARSH
- CURB & GUTTER
- CONCRETE EDGE
- BITUMINOUS EDGE
- GRAVEL EDGE
- FENCE
- CULVERT
- DECIDUOUS TREE
- CONIFER TREE
- HEDGE
- TREE LINE
- TRAFFIC SIGN
- MANHOLE
- CATCH BASIN
- 8" SAN INP — SANITARY SEWER
- 4" FM INP — SANITARY FORCEMAIN
- 15" STM INP — STORM SEWER
- TILE LINE
- 4" WMN INP — WATERMAIN
- HYDRANT
- VALVE
- CURB STOP
- GAS
- POWER POLE
- LIGHT POLE
- ET — PAD MOUNTED TRANSFORMER
- P-BUR — UNDERGROUND ELECTRIC
- OHU — OHU — OVERHEAD ELECTRIC
- UTILITY PEDESTAL/CABINET
- T-BUR — UNDERGROUND TELEPHONE
- F/O -BUR — UNDERGROUND TV CABLE
- BENCHMARK
- B-3 — SOIL BORING

PROPOSED

- 22+00 — ALIGNMENT/CENTERLINE
- RIGHT OF WAY LINE
- TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- CURB & GUTTER
- BITUMINOUS EDGE
- CONCRETE EDGE
- GRAVEL EDGE
- S F — SILT FENCE-MACHINE SLICED
- EROSION PROTECTION AT INLET
- MANHOLE
- CATCH BASIN
- 8" SAN — SANITARY SEWER
- 12" STM — STORM SEWER
- PERFORATED PIPE DRAIN
- CULVERT W/APRON
- HYDRANT
- VALVE
- CURBSTOP
- 6" WMN — WATERMAIN
- RETAINING WALL
- GUARDRAIL
- XC — XC — CHAINLINK FENCE



(NOT TO SCALE)

SECTION 12
TOWNSHIP 115
RANGE 22

PROJECT LOCATION

INDEX

SHEET	TITLE
1	TITLE SHEET
2	EXISTING CONDITIONS
3	SITE & EROSION CONTROL PLAN
4	SWPPP
5	GRADING PLAN
6	UTILITY & DRAINAGE PLAN
7	LANDSCAPE PLAN
8-10	STANDARD DETAILS

THIS PLAN SET CONTAINS 10 SHEETS

RESOURCE LIST

ENGINEER

Timothy R. Arvidson, P.E.
Stonebrooke Engineering, Inc.
12279 Nicollet Avenue
Burnsville, Minnesota 55337
(952) 540-4841

DEVELOPER

Mesenbrink Construction & Engineering, Inc.
John Mesenbrink
7765 East 175th Street
Prior Lake, MN 55372
(952) 447-5058

PUBLIC UTILITIES

Shakopee Public Utilites
255 Sarazin St.
Shakopee, MN 55379
(952) 445-1988

EXISTING UTILITY NOTE:
THE SUBSURFACE UTILITY INFORMATION SHOWN ON THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF "CI/ASCE 38-02 STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS PRIOR TO COMMENCING CONSTRUCTION AS REQUIRED BY STATE LAW. NOTIFY GOPHER STATE ONE-CALL AT (800) 252-1166 OR (651) 454-0002.

SPUC APPROVAL	CITY APPROVAL	DATE	REVISION

APPROVED FOR ONE YEAR FROM THIS DATE

CITY ENGINEER

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF SHAKOPEE GENERAL SPECIFICATIONS & STANDARD DETAIL PLATES.

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

NOT FOR CONSTRUCTION

Timothy R. Arvidson — LIC. NO. 25502 — DATE: 5/3/2018

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CITY OF SHAKOPEE'S GENERAL SPECIFICATIONS AND STANDARD DETAIL PLATES FOR STREET AND UTILITY CONSTRUCTION.

THE GOVERNING STANDARDS FOR THIS PROJECT SHALL BE:
THESE PLANS, THE CITY OF SHAKOPEE STANDARD CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS FOR UTILITY AND STREET CONSTRUCTION, THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION (Mn/DOT) "STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION" AND ANY AMENDMENTS, THE 1999 EDITION OF THE "STANDARD UTILITIES SPECIFICATION FOR WATERMAIN AND SERVICE LINE INSTALLATION AND SANITARY SEWER AND STORM SEWER INSTALLATION" AS PUBLISHED BY THE CITY ENGINEERS ASSOCIATION OF MINNESOTA, AND ANY SPECIAL PROVISIONS.

SHAKOPEE STANDARD SPECIFICATIONS TAKE PRECEDENCE!!

BENCH MARKS:

1) T.N.H. ON WEST SIDE OF STAGECOACH RD 50' NORTH OF CHICAGO & NW RR TRACKS ELEV.=743.54

2) T.N.H. ON WEST SIDE OF STAGECOACH RD 530' NORTH OF CHICAGO & NW RR TRACKS ELEV.=732.27

REV. NO.	DATE	BY	CHK	DESCRIPTION

RECORD DRAWING INFORMATION
OBSERVER:
CONTRACTOR:
DATE:

Stonebrooke Engineering Responsible Solutions™

May 03, 2018 - 5:14pm - S:\PROJECTS\CIVIL\0044_Mesenbrink_Const\C-00682\Surveys\CADD_Files\Production Drawings\00682_TITLE_SHEET.dwg

Tree #	DBH	Common Name	Scientific Name	Notes
4481	12	Jack Pine	*Pinus banksiana*	
4482	14	Jack Pine	*Pinus banksiana*	
4483	12	Jack Pine	*Pinus banksiana*	
4484	9	Jack Pine	*Pinus banksiana*	
4485	14,11	Jack Pine	*Pinus banksiana*	
4486	19	Cottonwood	*Populus deltoides*	
4487	11,7,6,6	Box Elder	*Acer negundo*	*
4488	12	Austrian Pine	*Pinus nigra*	top dead, in poor condition
4489	10	Mulberry	*Morus sp.*	
4490	11,10	Austrian Pine	*Pinus nigra*	
4491	4	Red Cedar	*Juniperus virginiana*	15' in height
4492	8	Bur Oak	*Quercus macrocarpa*	
4493	15,9	Northern Pin Oak	*Quercus ellipsoidalis*	major decay at base, hazard
4494	43	Bur Oak	*Quercus macrocarpa*	
4495	8,7,7,6,6	Box Elder	*Acer negundo*	*
4496	6,6	Box Elder	*Acer negundo*	*
4497	6	American Elm	*Ulmus americana*	*
4498	6	Green Ash	*Fraxinus pennsylvanica*	*
4499	7,6	Box Elder	*Acer negundo*	*
4500	10,7	Box Elder	*Acer negundo*	*
4501	7,6	Box Elder	*Acer negundo*	*
5894	16,14	Siberian Elm	*Ulmus pumila*	*
5895	18	Siberian Elm	*Ulmus pumila*	*
5896	6,6	Siberian Elm	*Ulmus pumila*	*
5897	7,6	Siberian Elm	*Ulmus pumila*	*
5898	6	Box Elder	*Acer negundo*	*
5899	6,6	Box Elder	*Acer negundo*	*
5900	6,6	Box Elder	*Acer negundo*	*

*** Undesirable Species listed in City of Shakopee Forestry Specifications Manual Appendix B.**

COUNTY STATE AID HIGHWAY 101
(FORMERLY STATE TRUNK HIGHWAY NO. 101)

PARCEL 4B
PID: 279120050

EX. 209 FT. 24" RCP @ -1.5%

EX. 24" RCP W/ APRON
INV. ELEV.=722.21

EX. 24" RCP W/ APRON
INV. ELEV.=728.24

EX. 161 FT. 24" RCP @ -2.9%

SCOTT COUNTY ROAD RIGHT OF WAY PLAT NO. 49

PARCEL 3
PID: 279120050

Δ=27°39'19" L=312.75 R=647.96
C=309.73 C. Brg=S81°08'18"W

S12°36'12"W 187.63

S16°52'16"W
45.82

EX. 15" CMP FLARE
INV. ELEV.=723.25

EX. 15" CMP FLARE
INV. ELEV.=724.0

21.2

Δ=61°20'28"
L=64.24
R=60.00

S57°20'56"E 80.19

45.58

N27°34'10"W
13.03

N17°24'33"E 109.17

N62°12'50"E
12.50

S72°23'31"W 79.20

S57°20'56"E 228.17

S57°09'53"E 311.24

4487

4486

4483

4484

4482

4485

4481

4495

4496

4497

4498

4499

4500

5894

5895

5896

5897

5898

5899

5900

4501

4493

4494

4492

4491

4490

4489

4488

LOT 1
54,634 SQ. FT
(1.25 ACRES)
PID: 273510010

EXISTING BUILDING
(OAHLON SIGN COMPANY)
FIRST FLOOR ELEV.= 728.08

LOT 2
140,404 SQ. FT
(3.22 ACRES)
PID: 273510020

LOT 3
PID: 273510030

BUSINESS CENTER

BLOCK 1

STAGECOACH ROAD

EX. CATCH BASIN
RIM ELEV=772.26
15" CMP WEST INV=764.11
15" RCP EAST INV=764.11

L=224.05' I=57°48' R=371.92'
C=214.47 C. Brg=S86°52'56"W

EX. 15" CMP W/ APRON
INV. ELEV.=741.17

81 FT. 15" CMP @ 28%

EX. 12" CMP BURIED
INV. ELEV.=725.79

EX. 12" CMP BURIED
ELEV.=725.43

N85°24'26"E
30.14

S89°38'39"E 87.69

157.36

25.8

EX. 21" RCP FLARE
INV. ELEV.=722.06

SEWER STUB
CURB STOP

SEWER STUB
CURB STOP

N04°37'13"W 823.21

EX 3" SAN FM

EX. 12" CMP
INV. ELEV.=730.37

EX. 12" CMP
INV. ELEV.=730.90

EX 12" WM

WIDTH VARIES

WIDTH VARIES

BENCHMARK #2
TOP NUT HYDRANT
ELEV.= 732.27

BENCHMARK #1
TOP NUT HYDRANT
ELEV.= 743.54

ZIEGLER OUTLOT A
PID: 270950021

LOT 1
PID: 270950021

BLOCK 1

CHICAGO ADDITION

PID: 270005000

REV. NO.	DATE	BY	CHK	DESCRIPTION

0 30 60
SCALE FEET

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NAME Timothy R. Arvidson LIC. NO. 25502 DATE 5-3-2018

DESIGNED
DRAWN TRH
CHECKED TRA

Stonebrooke
Engineering Responsible Solutions

EXISTING CONDITIONS

UNIVERSAL BUSINESS CENTER

SHEET 2 OF 10

May 03, 2018 - 2:36pm - S:\PROJECTS\CIVIL\0044_Mesenbrink_Const\C-00682\Surveys\CADD_Files\Production Drawings\00682_EXISTING_CONDITIONS.dwg

May 03, 2018 - 5:50pm - S:\PROJECTS\CIVIL\0044_Mesenbrink_Const\C-00682\Surveys\CADD_Files\Production Drawings\00682_SITE_&_EROSION_CONTROL_PLAN_SHEET.dwg

LEGEND

- BITUMINOUS PAVING
- CONCRETE SURFACE

CONSTRUCTION NOTES:

1. ALL CONTOURS AND SPOT ELEVATIONS ARE SHOWN TO FINISHED SURFACE GRADES UNLESS OTHERWISE NOTED.
2. REFER TO THE FINAL PLAT OR SITE PLAN FOR CURRENT HORIZONTAL SITE DIMENSIONS AND LAYOUT.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION AND ELEVATION OF EXISTING UTILITIES AND TOPOGRAPHICAL FEATURES WITH THE OWNERS AND FIELD-VERIFY PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY APPARENT DISCREPANCIES.
4. THE CONTRACTOR IS TO CONTACT GOPHER STATE "ONE CALL" FOR UTILITY LOCATIONS.
5. THE GRADING CONTRACTOR MUST BE AWARE OF ALL EXISTING AND PROPOSED UTILITIES.
6. ALL CONSTRUCTION SHALL CONFORM TO LOCAL AND STATE RULES INCLUDING THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT REQUIREMENTS AND WETLAND PERMITS.
7. ALL EXISTING PAVED STREETS WITH ACCESS TO THE SITE MUST BE CLEANED AT THE END OF EACH WORKING A ROCK ENTRANCE TO ALL ACCESSES TO THE SITE MUST BE PROVIDED ACCORDING TO DETAILS TO REDUCE TRACKING OF DIRT ONTO PUBLIC STREETS.
8. POSITIVE DRAINAGE FROM THE SITE MUST BE PROVIDED AT ALL TIMES. ALL RUNOFF FROM THE SITE SHALL BE CONTAINED WITHIN THE SITE UNTIL IT REACHES THE DESIGNATED DISCHARGE POINT. ANY DAMAGE DUE TO RUNOFF FROM THE SITE TO ADJACENT EXISTING DEVELOPED PROPERTIES SHALL BE RESTORED/REPAIRED BY THE CONTRACTOR AT HIS EXPENSE.
9. THE SITE MUST BE KEPT IN A WELL-DRAINED CONDITION AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY DITCHES, PIPING OR OTHER MEANS REQUIRED TO INSURE PROPER DRAINAGE DURING CONSTRUCTION.
10. PUBLIC STREETS USED FOR HAULING SHALL BE KEPT FREE OF SOIL AND DEBRIS. STREET SWEEPING SHALL BE CONCURRENT WITH EARTHWORK ON SITE.
11. HAULING HOURS MUST BE CONFIRMED WITH THE CITY PRIOR TO BEGINNING WORK.
12. CONTRACTOR SHALL FIELD VERIFY LOCATION AND ELEVATION OF IN PLACE SANITARY, STORM, WATER, AND PRIVATE UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
13. FINAL TURF RESTORATION SHALL BE IN PLACE WITHIN 30 WORKING DAYS OF COMPLETION OF GRADING OPERATIONS.

ROCK CONSTRUCTION ENTRANCE
MATCH EXISTING BIT. EDGE
PROTECT INLET
EX. 15" CMP FLARE INV. ELEV=723.35
EX. 15" CMP FLARE INV. ELEV=724.10
EX. 24" RCP @ 1.5%
EX. 24" RCP W/ APRON INV. ELEV= 739.21
EX. 24" RCP W/ APRON INV. ELEV= 738.24
EX. 24" RCP @ 2.5%
AP-1
AP-2
AP-3
AP-4
AP-5
AP-6
AP-7
AP-8
AP-9
AP-10
AP-11
AP-12
CB-1
CB-2
CB-3
CB-4
NORTH INFILTRATION BASIN
BOTTOM: 721
100 YR HWL: 725.27
RETAINING WALL
PROPOSED
UNIVERSAL STONE FACILITY
BUILDING FOOTPRINT AREA =50,856 SQ.FT.
FINISHED FLOOR ELEVATION = 738.25
160.7
364.5
UNDERGROUND TANK
FOR CAPTURE AND
RE-USE OF RAINWATER
(3,000 GALLON CAPACITY)
EXISTING BUILDING
(GAMEN-SON COMPANY)
FIRST FLOOR ELEV.= 728.38
EX. 12" CMP BURIED INV. ELEV.=725.79
EX. 12" CMP BURIED INV. ELEV.=725.63
EX. 21" RCP FLARE INV. ELEV.=723.06
6" WIDE CONCRETE WALK W/ 6" CURB FACE
B618 C&G (GUTTER IN)
SEE STORM SEWER SCHEDULE
SEE SANITARY SEWER SCHEDULE
112' 6" DIP WM
112' 1.5" COPPER WATER SERVICE
65' 2" SAN SERVICE
PROPOSED PIV
PROPOSED CURB STOP
CONNECT TO EXISTING STUB
PROPOSED LOCATION OF ELECTRIC TRANSFORMER
EX. 3" SAN FM
EX. 12" CMP INV. ELEV.=730.90
EX. 12" CMP INV. ELEV.=730.37
EX. 12" WM
STAGECOACH ROAD
SOUTH INFILTRATION BASIN
BOTTOM: 732.5
100 YR HWL: 736.07
EX. CATCH BASIN
RIM ELEV=772.26
15" CMP WEST INV=764.11
15" RCP EAST INV=764.11
BENCHMARK #1
TOP NUT HYDRANT
ELEV.= 743.54
BENCHMARK #2
TOP NUT HYDRANT
ELEV.= 732.27

REV. NO.	DATE	BY	CHK	DESCRIPTION

0 30 60
SCALE FEET

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NAME Timothy R. Arvidson LIC. NO. 25502 DATE 5-3-2018

DESIGNED	DRAWN	CHECKED
TRH	TRH	TRA

Stonebrooke
Engineering Responsible Solutions

SITE & EROSION CONTROL PLAN

UNIVERSAL BUSINESS CENTER

SHEET 3 OF 10

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

PROJECT DESCRIPTION:

THIS PROJECT IS LOCATED ON STAGECOACH ROAD. CONSTRUCTION ACTIVITIES ON THIS PROJECT INCLUDE GRADING, STORM SEWER CONSTRUCTION, SANITARY AND WATER SERVICE INSTALLATION, AND ALL SMALL AND PRIVATE UTILITIES (GAS, ELECTRIC, PHONE, CABLE, ETC.).

SWPPP IMPLEMENTATION

THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION OF THE SWPPP AND THE INSTALLATION, INSPECTION, AND MAINTENANCE OF THE EROSION PREVENTION AND SEDIMENT CONTROL BMPS BEFORE AND DURING CONSTRUCTION. THE CONTRACTOR WILL HAVE AN EROSION CONTROL SUPERVISOR WHO IS RESPONSIBLE FOR COORDINATING THE EROSION PREVENTION AND SEDIMENT CONTROL BMPS. THE CITY OF SHAKOPEE STAFF ARE ALSO AVAILABLE FOR ASSISTANCE.
VITALIY V. TERESHKOV IS RESPONSIBLE FOR LONG TERM OPERATION AND MAINTENANCE OF THE PERMANENT STORM WATER MANAGEMENT SYSTEM.
ADDRESS OF THE RESPONSIBLE PARTY: 3019 W. 133RD STREET, SHAKOPEE, MN 55379

PROJECT ENGINEER

THE CITY OF SHAKOPEE PROJECT CONSTRUCTION SUPERVISOR AND MAINTENANCE CONTACT IS:
STEVE LILLEHAUG
PUBLIC WORKS DIRECTOR - CITY OF SHAKOPEE
400 GORMAN ST
SHAKOPEE, MN 55379
952-233-9361

TRAINING DOCUMENTATION

PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR SHALL ENSURE THEY HAVE DOCUMENTATION FOR INDIVIDUALS IMPLEMENTING THE SWPPP INCLUDING:

1. NAMES OF PERSONNEL ASSOCIATED WITH THIS PROJECT WHICH HAVE BEEN ADEQUATELY TRAINED IN ACCORDANCE WITH THE NPDES PERMIT REQUIREMENTS.
2. DATES OF TRAINING AND NAME OF INSTRUCTOR(S) AND ENTITY PROVIDING TRAINING.
3. CONTENT OF TRAINING COURSE OR WORKSHOP INCLUDING NUMBER OF HOURS OF TRAINING.

TIMING OF BMP INSTALLATION

THE EROSION PREVENTION AND SEDIMENT CONTROL BMPS SHALL BE INSTALLED AS NECESSARY TO MINIMIZE EROSION FROM DISTURBED SURFACES AND CAPTURE SEDIMENT ON SITE.

1. STABILIZATION OF ALL EXPOSED SOIL (INCLUDING STOCKPILES) AREAS MUST BE INITIATED IMMEDIATELY TO LIMIT SOIL EROSION BUT IN NO CASE COMPLETED LATER THAN SEVEN (7) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.
2. PIPE OUTLETS MUST BE PROVIDED WITH TEMPORARY OR PERMANENT ENERGY DISSIPATION WITHIN 24 HOURS AFTER CONNECTION TO A SURFACE WATER.
3. SEDIMENT CONTROL PRACTICES MUST BE ESTABLISHED ON ALL DOWN GRADIENT PERIMETERS AND BE LOCATED UPGRADIENT OF ANY BUFFER ZONES. THE PERIMETER SEDIMENT CONTROL PRACTICE MUST BE IN PLACE BEFORE ANY UPGRADIENT LAND-DISTURBING ACTIVITIES BEGIN. THESE PRACTICES SHALL REMAIN IN PLACE UNTIL FINAL STABILIZATION HAS BEEN ESTABLISHED.
4. TEMPORARY OR PERMANENT DITCHES OR SWALES THAT ARE BEING USED AS A SEDIMENT CONTAINMENT SYSTEM DURING CONSTRUCTION (WITH PROPERLY DESIGNED ROCK-DITCH CHECKS, BIO ROLLS, SILT DIKES, ETC.) DO NOT NEED TO BE STABILIZED DURING THE TEMPORARY PERIOD OF ITS USE AS A SEDIMENT CONTAINMENT THESE AREAS MUST BE STABILIZED WITHIN 24 HOURS AFTER NO LONGER BEING USED AS A SEDIMENT CONTAINMENT SYSTEM.
5. THE NORMAL WETTED PERIMETER OF ANY TEMPORARY OR PERMANENT DRAINAGE DITCH OR SWALE THAT DRAINS WATER FROM ANY PORTION OF THE CONSTRUCTION SITE, OR DIVERTS WATER AROUND THE SITE, WITHIN 200 LINEAL FEET FROM THE PROPERTY EDGE, OR FROM THE POINT OF DISCHARGE INTO ANY SURFACE WATER MUST BE. STABILIZED. STABILIZATION OF THE LAST 200 LINEAL FEET MUST BE COMPLETED WITHIN 24 HOURS AFTER CONNECTING TO A SURFACE WATER OR PROPERTY EDGE.

BMP DESIGN FACTORS

1. EXPECTED AMOUNT, FREQUENCY, INTENSITY, AND DURATION OF PRECIPITATION.
2. NATURE OF STORMWATER RUNOFF AND RUN-ON AT THE SITE, INCLUDING FACTORS SUCH AS EXPECTED FLOW FROM IMPERVIOUS SURFACES, SLOPES, AND SITE DRAINAGE FEATURES.
3. IF ANY STORMWATER FLOW WILL BE CHANNELIZED AT THE SITE BMPs MUST CONTROL BOTH PEAK FLOWRATES AND COATTAIL STORMWATER VOLUME TO MINIMIZE EROSION AT OUTLETS AND TO MINIMIZE DOWNSTREAM CHANNEL AND STREAMBANK EROSION.
4. RANGE OF SOIL PARTICLE SIZES EXPECTED TO BE PRESENT ON THE SITE.

CONSTRUCTION NOTES:

CONSTRUCTION SHALL BE GOVERNED BY THE NPDES GENERAL PERMIT, PLANS, CITY OF SHAKOPEE GENERAL SPECIFICATIONS FOR CONSTRUCTION AND THE SPECIAL PROVISIONS.
THE CONTRACTOR SHALL MINIMIZE SOIL COMPACTION AND PRESERVE TOPSOIL BY LIMITING CONSTRUCTION EQUIPMENT UNLESS THE FUNCTION OF A SPECIFIC AREA DICTATES THAT IT BE COMPACTED.
THE CONTRACTOR SHALL MAINTAIN A STOCKPILE OF EROSION CONTROL DEVICES AT ALL TIMES FOR IMMEDIATE USAGE.
THE CONTRACTOR SHALL KEEP THE INSPECTION AND MAINTENANCE LOG.
IN THE EVENT OF ACCIDENTAL SEDIMENT OR POLLUTANT DISCHARGE, THE MPCA LOCAL CONTACT AND/OR STATE DUTY OFFICER SHALL BE NOTIFIED. THE MPCA STATE DUTY OFFICER CAN BE REACHED AT (800) 422-0798.

EROSION PREVENTION MEASURES:

1. APPROPRIATE BMPS SUCH AS CONSTRUCTION PHASING, VEGETATIVE BUFFER STRIPS, HORIZONTAL SLOPE GRADING, INSPECTION AND MAINTENANCE, AND OTHER CONSTRUCTION PRACTICES THAT MINIMIZE EROSION AS NECESSARY TO PROTECT WATERS OF THE STATE MUST BE PLANNED AND IMPLEMENTED.
2. THE PERMITTEE(S) MUST STABILIZE ALL EXPOSED SOIL AREAS (INCLUDING STOCKPILES). STABILIZATION MUST BE INITIATED IMMEDIATELY TO LIMIT SOIL EROSION WHENEVER ANY CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE AND WILL NOT RESUME FOR A PERIOD EXCEEDING 7 CALENDAR DAYS. STABILIZATION MUST BE COMPLETED NO LATER THAN 7 CALENDAR DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. FOR PUBLIC WATERS THAT THE MINNESOTA DEPARTMENT OF NATURAL RESOURCES HAS PROMULGATED "WORK IN WATER RESTRICTIONS" DURING SPECIFIED FISH SPAWNING TIME FRAMES, ALL EXPOSED SOIL AREAS THAT ARE WITHIN 200 FEET OF THE WATER'S EDGE, AND DRAIN TO THESE WATERS MUST COMPLETE THE STABILIZATION ACTIVITIES WITHIN 24 HOURS DURING THE RESTRICTION PERIOD. TEMPORARY STOCKPILES WITHOUT SIGNIFICANT SILT, CLAY OR ORGANIC COMPONENTS (E.G., CLEAN AGGREGATE STOCKPILES, DEMOLITION CONCRETE STOCKPILES, SAND STOCKPILES) AND THE CONSTRUCTED BASE COMPONENTS OF ROADS, PARKING LOTS AND SIMILAR SURFACES ARE EXEMPT FROM THIS REQUIREMENT.
3. PIPE OUTLETS MUST BE PROVIDED WITH TEMPORARY OR PERMANENT ENERGY DISSIPATION WITHIN 24 HOURS AFTER CONNECTION TO SURFACE WATER.

SEDIMENT CONTROL MEASURES:

1. SEDIMENT CONTROL PRACTICES MUST BE EMPLOYED AS NECESSARY TO MINIMIZE SEDIMENT FROM ENTERING SURFACE WATERS, INCLUDING CURB AND GUTTER SYSTEMS AND STORM SEWER INLETS.
2. SEDIMENT CONTROL PRACTICES MUST BE ESTABLISHED ON ALL DOWN GRADIENT PERIMETERS AND BE LOCATED UPGRADIENT OF ANY BUFFER ZONES. THE PERIMETER SEDIMENT CONTROL PRACTICE MUST BE IN PLACE BEFORE ANY UPGRADIENT LAND-DISTURBING ACTIVITIES BEGIN. THESE PRACTICES SHALL REMAIN IN PLACE UNTIL FINAL STABILIZATION HAS BEEN ESTABLISHED.
3. IF THE DOWN GRADIENT SEDIMENT CONTROLS ARE OVERLOADED (BASED ON FREQUENT FAILURE OR EXCESSIVE MAINTENANCE REQUIREMENT), THE CONTRACTOR MUST INSTALL ADDITIONAL UPGRADIENT SEDIMENT CONTROL PRACTICES TO ELIMINATE THE OVERLOADING.
4. TEMPORARY SOIL STOCKPILES MUST HAVE SILT FENCE OR OTHER EFFECTIVE SEDIMENT CONTROLS, AND CANNOT BE PLACED IN ANY NATURAL BUFFERS OR SURFACE WATERS, INCLUDING STORMWATER CONVEYANCES SUCH AS CURB AND GUTTER SYSTEMS, OR CONDUITS AND DITCHES UNLESS THERE IS A BYPASS IN PLACE FOR THE STORMWATER.
5. MAINTAIN A 100 FOOT NATURAL BUFFER OR USE REDUNDANT SEDIMENT CONTROLS NEAR SURFACE WATERS IF A BUFFER IS NOT FEASIBLE.
6. ALL STORM DRAIN INLETS MUST BE PROTECTED WITH INLET PROTECTION. INLET PROTECTION MAY BE REMOVED FOR A PARTICULAR INLET IF A SPECIFIC SAFETY CONCERN (STREET FLOODING/FREEZING) HAS BEEN IDENTIFIED BY THE OWNER OR JURISDICTIONAL AUTHORITY (E.G., CITY/COUNTY/TOWNSHIP/ MnDOT/ENGINEER). THE NEED FOR REMOVAL MUST BE DOCUMENTED IN THE SWPPP.
7. CONVENTIONAL EROSION AND SEDIMENT CONTROLS SHALL BE USED PRIOR TO CHEMICAL TREATMENT. IF POLYMERS, FLOCCULANTS, OR OTHER SEDIMENTATION TREATMENT CHEMICALS ARE USED THEY SHALL BE USED WHERE TREATED STORMWATER IS DIRECTED TO A SEDIMENT CONTROL SYSTEM WHICH ALLOWS FOR FILTRATION OR SETTLEMENT OF THE FLOC PRIOR TO DISCHARGE. CHEMICALS SHALL BE CHOSEN BASED ON SOIL TYPES, EXPECTED TURBIDITY, PH AND FLOW RATE INTO THE TREATMENT SYSTEM. CHEMICALS SHALL BE USED WITH ACCEPTED ENGINEERING PRACTICES AND DOSING SPECIFICATIONS PROVIDED BY THE MANUFACTURER.

THE DESCRIPTION OF INSPECTIONS AND MAINTENANCE:

THE PERMITTEE(S) MUST ENSURE THAT A TRAINED PERSON WILL ROUTINELY INSPECT THE ENTIRE CONSTRUCTION SITE AT LEAST ONCE EVERY WEEK DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS. FOLLOWING AN INSPECTION THAT OCCURS WITHIN 24 HOURS AFTER A RAINFALL EVENT, THE NEXT INSPECTION MUST BE CONDUCTED WITHIN SEVEN (7) DAYS AFTER THE RAINFALL EVENT.

INSPECTION AND MAINTENANCE REQUIREMENTS MUST INCLUDE:

- O DATE AND TIME OF INSPECTIONS.
- O NAME OF PERSON(S) CONDUCTING INSPECTIONS.
- O FINDINGS OF INSPECTIONS, INCLUDING THE SPECIFIC LOCATION WHERE CORRECTIVE ACTIONS ARE NEEDED.
- O CORRECTIVE ACTIONS TAKEN (INCLUDING DATES, TIMES, AND PARTY COMPLETING MAINTENANCE ACTIVITIES).
- O DATE AND AMOUNT OF ALL RAINFALL EVENTS GREATER THAN 1/2 INCH (0.5 INCHES) IN 24 HOURS. RAINFALL AMOUNTS MUST BE OBTAINED BY A PROPERLY MAINTAINED RAIN GAUGE INSTALLED ONSITE, A WEATHER STATION THAT IS WITHIN 1 MILE OF YOUR LOCATION OR A WEATHER REPORTING SYSTEM THAT PROVIDES SITE SPECIFIC RAINFALL DATA FROM RADAR SUMMARIES.
- O IF ANY DISCHARGE IS OBSERVED TO BE OCCURRING DURING THE INSPECTION, A RECORD OF ALL POINTS OF THE PROPERTY FROM WHICH THERE IS A DISCHARGE MUST BE MADE, AND THE DISCHARGE SHOULD BE DESCRIBED (I.E., COLOR, ODOR, FLOATING, SETTLED, OR SUSPENDED SOLIDS, FOAM, OIL SHEEN, AND OTHER OBVIOUS INDICATORS OF POLLUTANTS) AND PHOTOGRAPHED.
- O ANY AMENDMENTS TO THE SWPPP PROPOSED AS A RESULT OF THE INSPECTION MUST BE DOCUMENTED AS REQUIRED WITHIN SEVEN (7) CALENDAR DAYS.
- O WHERE WORK HAS BEEN SUSPENDED DUE TO FROZEN GROUND CONDITIONS, THE INSPECTIONS MAY BE SUSPENDED. THE REQUIRED INSPECTIONS AND MAINTENANCE SCHEDULE MUST BEGIN WITHIN 24 HOURS AFTER RUNOFF OCCURS AT THE SITE OR 24 HOURS PRIOR TO CONSTRUCTION.

MAINTENANCE PERFORMANCE:

ALL NONFUNCTIONAL BMPS MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WITH FUNCTIONAL BMPS BY THE END OF THE NEXT BUSINESS DAY AFTER DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS UNLESS ANOTHER TIME FRAME IS SPECIFIED THAT IS NOT LESS RESTRICTIVE THAN PERMIT REQUIREMENTS.

DEWATERING AND BASIN DRAINING:

SITE DRAINING ACTIVITIES OF TURBID OR SEDIMENT LADEN WATER WILL BE DISCHARGED TO TEMPORARY SEDIMENT BASINS WHENEVER POSSIBLE. IN THE EVENT THAT IT IS NOT POSSIBLE TO DISCHARGE THE SEDIMENT LADEN WATER TO A TEMPORARY SEDIMENT BASIN, THE WATER MUST BE TREATED SO THAT IT DOES NOT CAUSE A NUISANCE CONDITION IN THE RECEIVING WATERS OR TO DOWNSTREAM LANDOWNERS. IF THE CONTRACTOR MUST DISCHARGE WATER THAT CONTAINS OIL OR GREASE, THE CONTRACTOR MUST USE AN OIL-WATER SEPARATOR OR SUITABLE FILTRATION DEVICE PRIOR TO DISCHARGING THE WATER.
THE CONTRACTOR MUST ENSURE THAT DISCHARGE POINTS ARE ADEQUATELY PROTECTED FROM EROSION AND SCOUR.

SWPPP AMENDMENTS:

THE PERMITTEE MUST AMEND THE SWPPP AS NECESSARY TO INCLUDE ADDITIONAL REQUIREMENTS TO CORRECT PROBLEMS IDENTIFIED.

1. AMENDMENTS SHALL BE MADE IF THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION, MAINTENANCE, WEATHER OR SEASONAL CONDITIONS.
2. INSPECTIONS BY THE OWNER, OPERATOR, USEPA OR MPCA OFFICIALS DETERMINE THAT THE SWPPP IS NOT MINIMIZING THE DISCHARGE OF POLLUTANTS TO SURFACE OR UNDERGROUND WATERS.
3. THE SWPPP IS NOT ACHIEVING THE GENERAL OBJECTIVES OF MINIMIZING POLLUTANTS IN STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY.

POLLUTION PREVENTION MANAGEMENT:

1. SOLID WASTE: COLLECTED SEDIMENT, ASPHALT AND CONCRETE MILLINGS, FLOATING DEBRIS, PAPER, PLASTIC, FABRIC, CONSTRUCTION AND DEMOLITION DEBRIS AND OTHER WASTES MUST BE DISPOSED OF PROPERLY IN COMPLIANCE WITH MINN. R. CH. 7035.
2. HAZARDOUS MATERIALS, TOXIC WASTE, (INCLUDING OIL, DIESEL FUEL, GASOLINE, HYDRAULIC FLUIDS, PAINT SOLVENTS, PETROLEUM-BASED PRODUCTS, WOOD PRESERVATIVES, ADDITIVES, CURING COMPOUNDS, AND ACIDS) MUST BE PROPERLY STORED IN SEALED CONTAINERS TO PREVENT SPILLS, LEAKS OR OTHER DISCHARGE. RESTRICTED ACCESS STORAGE AREAS MUST BE PROVIDED TO PREVENT VANDALISM. STORAGE AND DISPOSAL OF HAZARDOUS WASTE OR HAZARDOUS MATERIALS MUST BE IN COMPLIANCE WITH MINN. R. CH. 7045 INCLUDING SECONDARY CONTAINMENT AS APPLICABLE.
3. PESTICIDES, HERBICIDES, INSECTICIDES, FERTILIZERS, TREATMENT CHEMICALS, AND LANDSCAPE MATERIALS MUST BE UNDER COVER TO PREVENT THE DISCHARGE OF POLLUTANTS OR PROTECTED BY SIMILARLY EFFECTIVE MEANS DESIGNED TO MINIMIZE CONTACT WITH STORMWATER.
4. PORTABLE TOILETS MUST BE POSITIONED SO THAT THEY ARE SECURE AND WILL NOT BE TIPPED OR KNOCKED OVER. SANITARY WASTE MUST BE DISPOSED OF PROPERLY IN ACCORDANCE WITH MINN. R. CH. 7041.
5. FUELING AND MAINTENANCE OF EQUIPMENT OR VEHICLES; SPILL PREVENTION AND RESPONSE: THE REASONABLE STEPS SHALL BE TAKEN TO PREVENT THE DISCHARGE OF SPILLED OR LEAKED CHEMICALS, INCLUDING FUEL, FROM ANY AREA WHERE CHEMICALS OR FUEL WILL BE LOADED OR UNLOADED INCLUDING THE USE OF DRIP PANS OR ABSORBENTS UNLESS INFEASIBLE. FUELING MUST BE CONDUCTED IN A CONTAINED AREA UNLESS INFEASIBLE. ADEQUATE SUPPLIES MUST BE AVAILABLE AT ALL TIMES TO CLEAN UP DISCHARGED MATERIALS AND THAT AN APPROPRIATE DISPOSAL METHOD IS AVAILABLE FOR RECOVERED SPILLED MATERIALS. ALL CLEAN UP SPILL MUST BE REPORTED IMMEDIATELY AS REQUIRED BY MINN. 115.061, USING DRY CLEAN UP MEASURES WHERE POSSIBLE.
6. VEHICLE AND EQUIPMENT WASHING: IF THE EXTERIOR OF VEHICLES OR EQUIPMENT IS WASHED ON THE PROJECT SITE, WASHING MUST BE LIMITED TO A DEFINED AREA OF THE SITE. RUNOFF FROM THE WASHING AREA MUST BE CONTAINED IN A SEDIMENT BASIN OR OTHER SIMILARLY EFFECTIVE CONTROLS AND WASTE FROM THE WASHING ACTIVITY MUST BE PROPERLY DISPOSED OF. SOAPS, DETERGENTS, OR SOLVENTS MUST BE PROPERLY USED AND STORED. NO ENGINE DEGREASING IS ALLOWED ON SITE.
7. CONCRETE AND OTHER WASHOUTS WASTE: EFFECTIVE CONTAINMENT MUST BE PROVIDED FOR ALL LIQUID AND SOLID WASTES GENERATED BY WASHOUT OPERATIONS (CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS AND OTHER CONSTRUCTION MATERIALS) RELATED TO THE CONSTRUCTION ACTIVITY. THE LIQUID AND SOLID WASHOUT WASTES MUST NOT CONTACT THE GROUND, AND THE CONTAINMENT MUST BE DESIGNED SO THAT IT DOES NOT RESULT IN RUNOFF FROM THE WASHOUT OPERATIONS OR AREAS. LIQUID AND SOLID WASTES MUST BE DISPOSED OF PROPERLY AND IN COMPLIANCE WITH MPCA RULES. A SIGN MUST BE INSTALLED ADJACENT TO EACH WASHOUT FACILITY THAT REQUIRES SITE PERSONNEL TO UTILIZE THE PROPER FACILITIES FOR DISPOSAL OF CONCRETE AND OTHER WASHOUT WASTES.

FINAL STABILIZATION:

1. IS NOT COMPLETE UNTIL ALL PERMANENT STORMWATER MANAGEMENT SYSTEMS ARE CONSTRUCTED, AND ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED AND ALL SOILS ARE STABILIZED BY A UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70 PERCENT OF ITS EXPECTED FINAL GROWTH DENSITY OVER THE ENTIRE PERVIOUS SURFACE AREA, OR OTHER EQUIVALENT MEANS NECESSARY TO PREVENT SOIL FAILURE UNDER EROSIVE CONDITIONS. PERMANENT TURF ESTABLISHMENT SHALL CONSIST OF SOD OR SEED AND ANY FERTILIZER, MULCH AND DISK ANCHORING AND MAINTENANCE AS REQUIRED PER CITY OF SHAKOPEE GENERAL SPECIFICATIONS.
2. IS NOT COMPLETE UNTIL ALL TEMPORARY SYNTHETIC AND STRUCTURAL EROSION PREVENTION AND SEDIMENT CONTROL BMPS (SUCH AS SILT FENCE) HAVE BEEN REMOVED ON THE PORTIONS OF THE SITE FOR WHICH THE PERMITTEE(S) IS/ARE RESPONSIBLE. BMPS DESIGNED TO DECOMPOSE ON SITE (SUCH AS SOME COMPOST LOGS) MAY BE LEFT IN PLACE.

DISCHARGE TO WETLANDS:

IF THE POTENTIAL ADVERSE IMPACTS TO A WETLAND ON A SPECIFIC PROJECT SITE HAVE BEEN ADDRESSED BY PERMITS OR OTHER APPROVALS FROM AN OFFICIAL STATEWIDE PROGRAM (U.S. ARMY CORPS OF ENGINEERS 404 PROGRAM, MINNESOTA DNR, OR THE STATE OF MINNESOTA WETLAND CONSERVATION ACT) THAT ARE ISSUED SPECIFICALLY FOR THE PROJECT AND PROJECT SITE, THE PERMIT MAY BE USED OR OTHER DETERMINATION ISSUED BY THESE AGENCIES TO SHOW THAT THE POTENTIAL ADVERSE IMPACTS HAVE BEEN ADDRESSED.

RECORD RETENTION:

THE SWPPP INCLUDING, ALL CHANGES TO IT AND INSPECTIONS AND MAINTENANCE RECORDS MUST BE KEPT AT THE SITE DURING CONSTRUCTION BY THE THE CONTRACTOR WHO HAS/HAVE OPERATIONAL CONTROL OF THAT PORTION OF THE SITE. THE SWPPP CAN BE KEPT IN EITHER THE FIELD OFFICE OR IN AN ON-SITE VEHICLE DURING NORMAL WORKING HOURS.

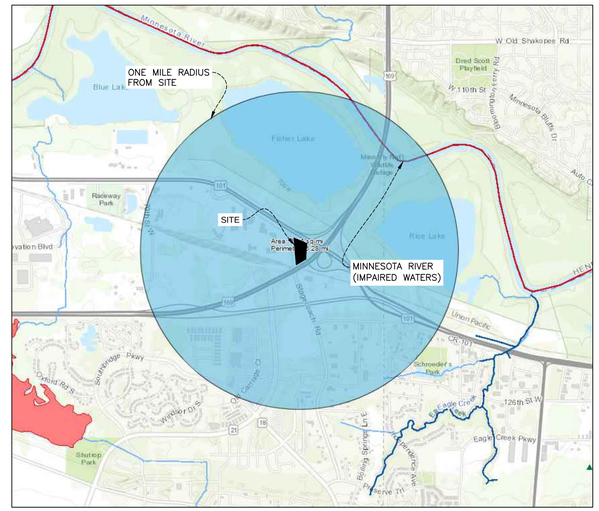
ALL OWNERS MUST KEEP THE FOLLOWING RECORDS ON FILE FOR 3 YEARS AFTER SUBMITTAL OF THE NOT.

1. THE FINAL SWPPP.
2. ANY OTHER STORMWATER RELATED PERMITS REQUIRED FOR THE PROJECT.
3. RECORDS OF ALL INSPECTION AND MAINTENANCE CONDUCTED DURING CONSTRUCTION.
4. ALL PERMANENT OPERATION AND MAINTENANCE AGREEMENTS THAT HAVE BEEN IMPLEMENTED INCLUDING ALL RIGHT-OF-WAY, CONTRACTS, COVENANTS AND OTHER BINDING REQUIREMENTS REGARDING PERPETUAL MAINTENANCE.

KARST AREA PROTECTION:

THIS PROJECT IS LOCATED IN THE KARST AREA OF MINNESOTA. NO KNOWN SINK HOLES EXIST IN OR NEAR THE PROJECT. IF POTENTIAL SINK HOLES ARE ENCOUNTERED DURING CONSTRUCTION, CONTACT THE DISTRICT SOILS ENGINEER FOR RECOMMENDATIONS. IF ANY TEMPORARY OR PERMANENT PONDS ARE CONSTRUCTED THEY MUST BE LINED WITH AN IMPERMIAL FABRIC.
THE PROPOSED CONSTRUCTION WILL NOT EFFECT THE DRINKING WATER SUPPLY MANAGEMENT AREA.

AREA MAP



LOCATION OF SWPPP REQUIREMENTS IN PROJECT PLAN	
DESCRIPTION	SHEETS
SITE MAP	3
EROSION CONTROL DETAILS	3
TURF ESTABLISHMENT AND EROSION CONTROL	3 & 7
DRAINAGE PLAN	6
POND DETAILS	5
GRADING PLAN	5

AGENCY CONTACTS			
AGENCY	PERMIT	CONTACT NAME	PHONE NUMBER
MINNESOTA POLLUTION CONTROL AGENCY	NPDES	PAUL ERDMANN	(651) 757-2883
DESIGNER - STONEBROOKE ENGINEERING	NA	TIM ARVIDSON	(952) 540-4855
ARMY CORPS OF ENGINEERS	NA		(651) 290-5286
SCOTT COUNTY ENGINEER	NA	JON SHELKOPH	(952) 946-8041

MPCA 24 HOUR EMERGENCY NOTIFICATION: 651-649-5451 OR 800-422-0798

TREATMENT SYSTEM		
NAME	TREATMENT VOLUME (CU.FT.)	TREATMENT TYPE
UNDERGROUND TANK	401	REUSE
INDOOR TANK	512	REUSE
NORTH INFILTRATION BASIN	7,840	INFILTRATION BASIN
SOUTH INFILTRATION BASIN	3,703	INFILTRATION BASIN
TOTAL TREATMENT VOLUME	12,456 (12.190 REQUIRED)	

IMPERVIOUS SURFACE CHANGE:

DISTURBED AREA: 3.223 ACRES
TOTAL IMPERVIOUS AREA BEFORE CONSTRUCTION: 0.00 ACRES
TOTAL IMPERVIOUS AREA AFTER CONSTRUCTION: 2.417 ACRES
TOTAL INCREASE IN IMPERVIOUS AREA: 2.417 ACRES

REV. NO.	DATE	BY	CHK	DESCRIPTION

0 30 60
SCALE FEET

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

NAME Timothy R. Arvidson LIC. NO. 25502 DATE 5-3-2018

DESIGNED TRH
DRAWN TRH
CHECKED TRA

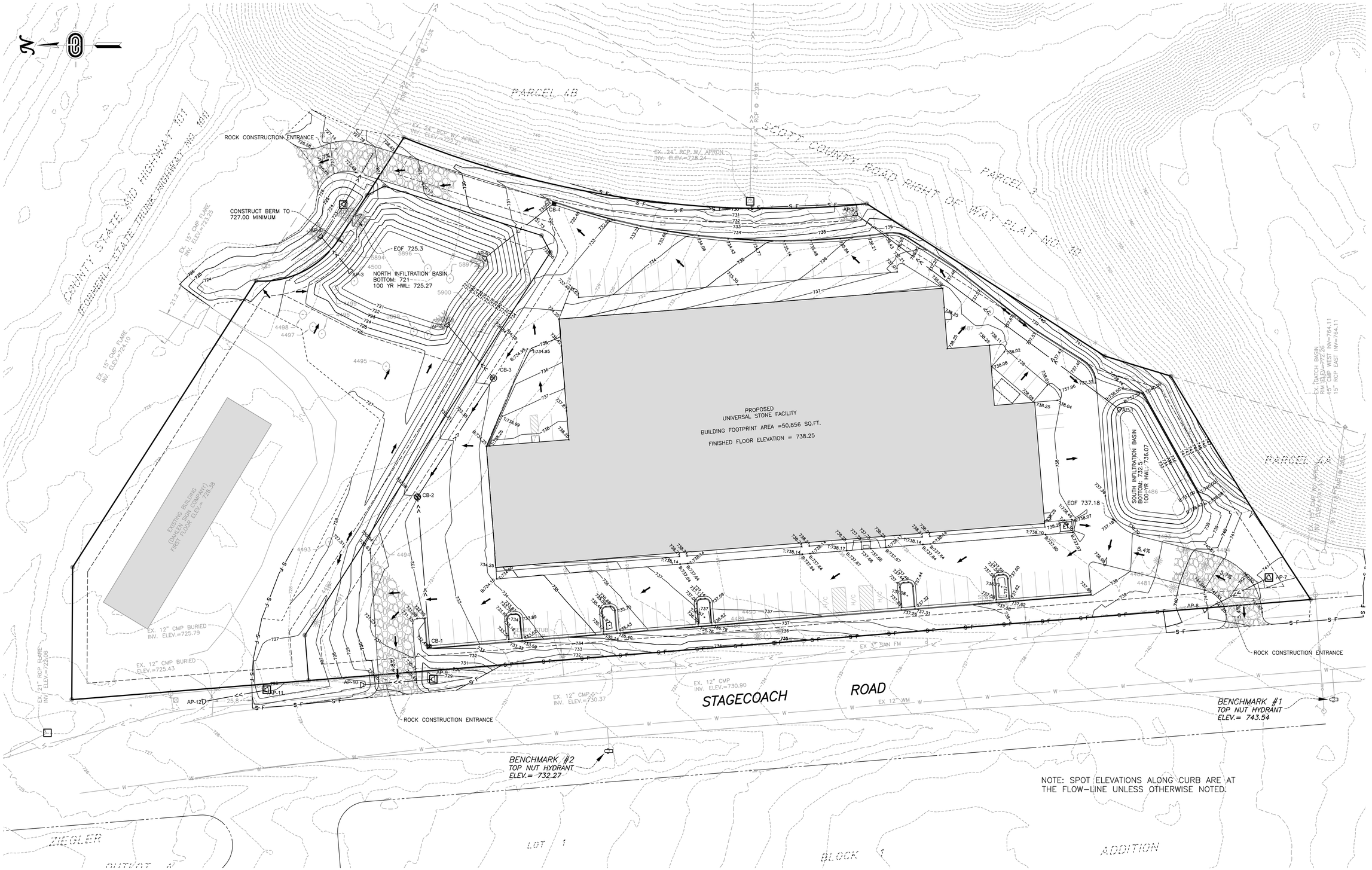
Stonebrooke Engineering Responsible Solutions

SWPPP

UNIVERSAL BUSINESS CENTER

SHEET 4 OF 10

May 03, 2018 - 5:49pm - S:\PROJECTS\CIVIL\0044_Mesenbrink_Const\C-00682\Surveys\CADD_Files\Production Drawings\00682-SITE_&_EROSION_CONTROL_PLAN_SHEET.dwg



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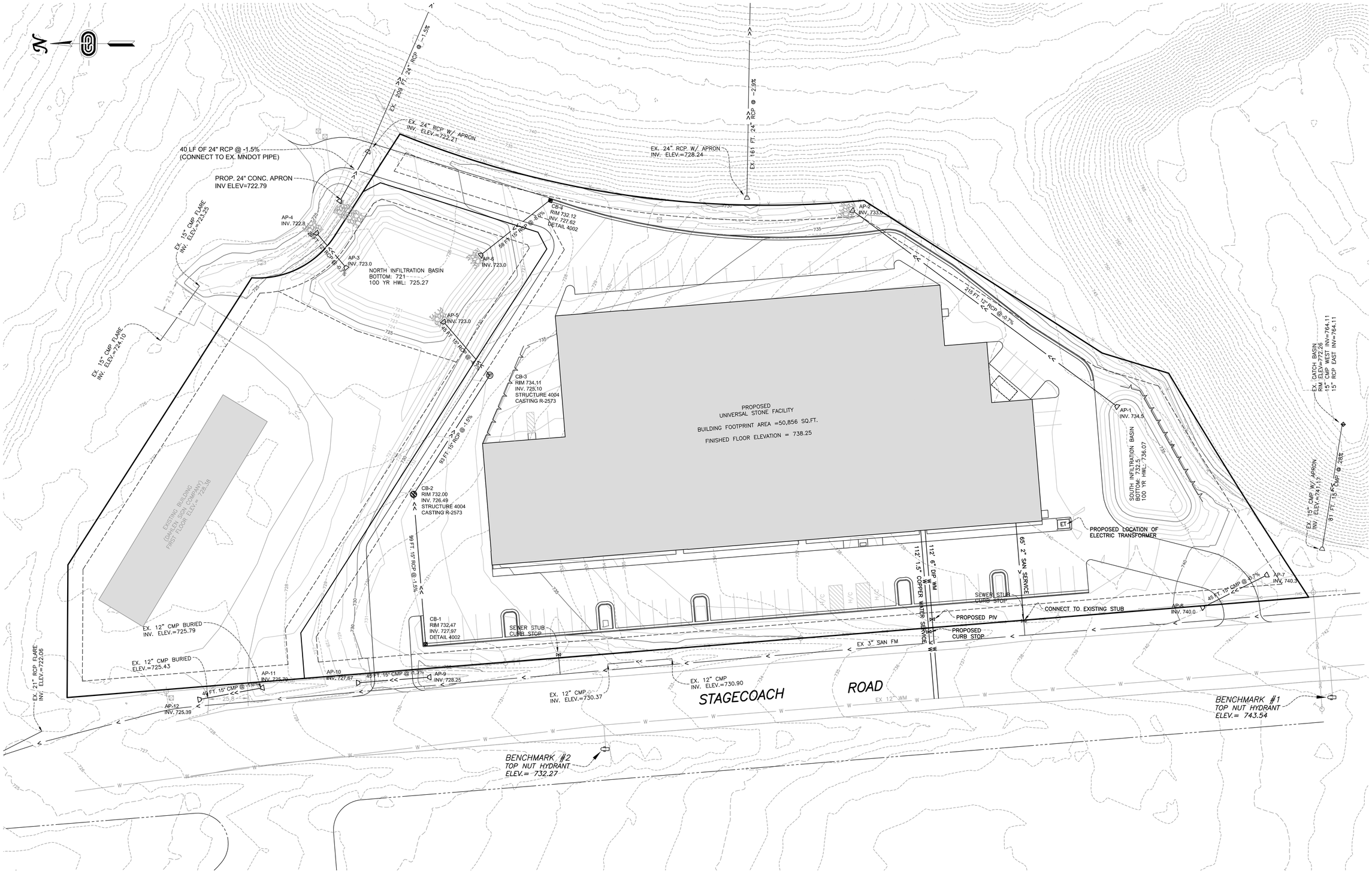
GRADING PLAN

UNIVERSAL BUSINESS CENTER

SHEET 5 OF 10

May 03, 2018 - 6:24pm - S:\PROJECTS\CIVIL\0044_Mesenbrink_Const\C-00682\Surveys\CADD_Files\Production Drawings\00682_GRADING -PLAN_SHEET.dwg

May 03, 2018 - 5:40pm - S:\PROJECTS\CIVIL\0044_Mesenbrink_Const\C-00682\Surveys\CADD_Files\Production Drawings\00682_UTILITY_&_STORMWATER_MANAGEMENT_PLAN_SHEET.dwg



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SCALE FEET

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NAME Timothy R. Arvidson LIC. NO. 25502 DATE 5-3-2018

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UTILITY & DRAINAGE PLAN

UNIVERSAL BUSINESS CENTER

SHEET 6 OF 10

LEGEND

- DECIDUOUS TREE
- CONIFER TREE
- LANDSCAPING SHRUB
- MNDOT SEED MIX 33-261 @ 35 LBS/ACRE
  EROSION CONTROL BLANKET, CATEGORY 3
  FERTILIZER TYPE 4 (17-10-7 @ 150 LBS/ACRE)
- MNDOT SEED MIX 25-131 @ 200 LBS/ACRE
  HYDRAULIC REINFORCED FIBER MATRIX @ 3900 LBS/ACRE
  FERTILIZER TYPE 3 (25-5-10 @ 350 LBS/ACRE)
- NATIVE PLANTS

LANDSCAPING

KEY	COMMON NAME/SCIENTIFIC NAME	SIZE	QUANTITY EACH/UNITS
	DECIDUOUS TREES		
GK	GINKGO *(GINKGO BILOBA)*	1.25" B&B	6
HB	HACKBERRY *(CELTIS OCCIDENTALIS)*	1.25" B&B	6
HD	HONEYLOCUST, THORNLESS *(GLEDITSIA TRIACANTHOS VAR. INERMIS)*	1.25" B&B	6
KC	COFFEETREE, KENTUCKY *(GYMNOCIADUS DIOICUS)*	1.25" B&B	6
SB	SERVICEBERRY, ALLEGHENY *(AMELANCHIER LAEVIS)*	1.25" B&B	6
WO	OAK, WHITE *(QUERCUS ALBA)*	1.25" B&B	6
LL	LINDEN, LITTLELEAF *(TILIA CORDATA)*	1.25" B&B	6
	CONIFEROUS TREES		
RC	CEDAR, RED *(JUNIPEROUS VIRGINIANA)*	5' TALL	6
WF	FIR, WHITE *(ABIES CONCOLOR)*	5' TALL	3
AL	LARCH, AMERICAN *(LARIX LARICINA)*	5' TALL	4
WP	PINE, EASTERN WHITE *(PINUS STROBUS)*	5' TALL	5
	OTHER		
	LANDSCAPE SHRUBS	5 GALLON	56
	NATIVE PLANTS (800 SQ. FT. / UNIT)	800 SQ. FT.	11

* CONTACT CITY PRIOR TO PLANTING TO VERIFY FINAL SPECIES AND LOCATIONS.

EX. 209 FT. 24" RCP @ -1.5%
EX. 24" RCP W/ APRON INV. ELEV.=722.21
EX. 161 FT. 24" RCP @ -2.0%
EX. 24" RCP W/ APRON INV. ELEV.=728.24
5230 SQ. FT. OF NATIVE PLANTS
2405 SQ. FT. OF NATIVE PLANTS
945 SQ. FT. OF NATIVE PLANTS
236 SQ. FT. OF NATIVE PLANTS
EX. 15" CMP FLARE INV. ELEV.=723.25
EX. 15" CMP FLARE INV. ELEV.=724.10
NORTH INFILTRATION BASIN
BOTTOM: 721
100 YR HWL: 725.27
PROPOSED
UNIVERSAL STONE FACILITY
BUILDING FOOTPRINT AREA =50,856 SQ.FT.
FINISHED FLOOR ELEVATION = 738.25
EXISTING BUILDING
(DAHLEN SIGN COMPANY)
FIRST FLOOR ELEV.= 728.38
EX. CATCH BASIN
RIM ELEV.=772.26
15" CMP WEST INV.=764.11
15" RCP EAST INV.=764.11
SOUTH INFILTRATION BASIN
BOTTOM: 732.5
100 YR HWL: 736.07
EX. 15" CMP W/ APRON INV. ELEV.=741.17
81 FT. 15" CMP @ 28%
20 LANDSCAPING SHRUBS
12 LANDSCAPING SHRUBS
12 LANDSCAPING SHRUBS
12 LANDSCAPING SHRUBS
EX. 12" CMP BURIED INV. ELEV.=725.79
EX. 12" CMP BURIED ELEV.=725.43
EX. 21" RCP FLARE INV. ELEV.=722.05
EX. 12" CMP INV. ELEV.=730.37
EX. 12" CMP INV. ELEV.=730.90
EX. 12" WM
STAGECOACH ROAD
BENCHMARK #1
TOP NUT HYDRANT
ELEV.= 743.54
BENCHMARK #2
TOP NUT HYDRANT
ELEV.= 732.27

REV. NO.	DATE	BY	CHK	DESCRIPTION

0 30 60
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NAME Timothy R. Arvidson LIC. NO. 25502 DATE 5-3-2018

DESIGNED LJF
DRAWN LJF
CHECKED TRA

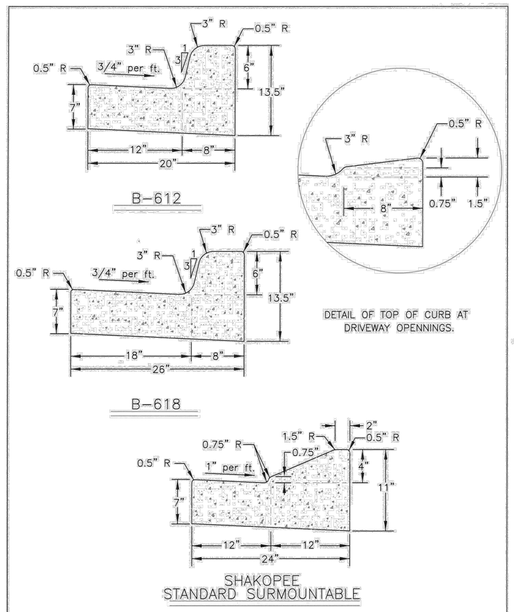
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LANDSCAPE & TURF ESTABLISHMENT PLAN

UNIVERSAL BUSINESS CENTER

SHEET 7 OF 10

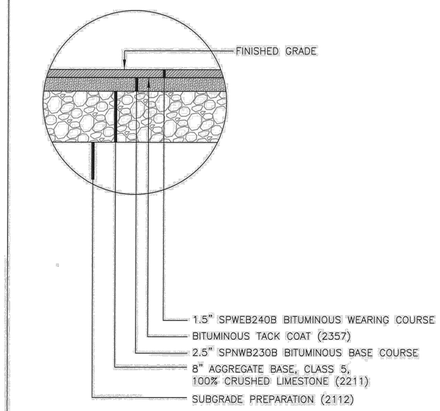
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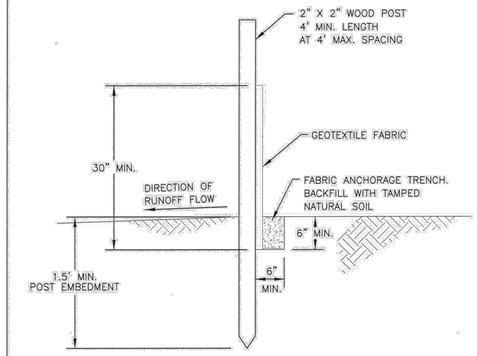
DETAIL OF TOP OF CURB AT DRIVEWAY OPENNINGS.

SHAKOPEE
STANDARD SURMOUNTABLE

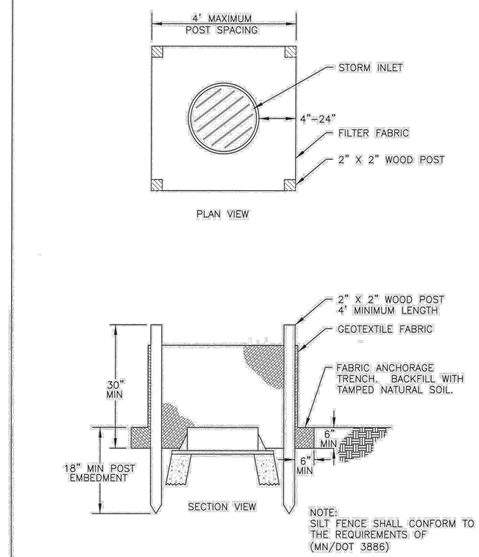
SHAKOPEE	CONCRETE CURB AND GUTTER FOR STREETS	APPROVED:	DETAIL NO:
		REVISION DATE: JANUARY 2007	1003
		SHAKOPEE ENGINEERING DEPARTMENT	



SHAKOPEE	STANDARD DETAIL BITUMINOUS PATCH	APPROVED:	DETAIL NO:
		REVISION DATE: MAY 2010	1004
		SHAKOPEE ENGINEERING DEPARTMENT	

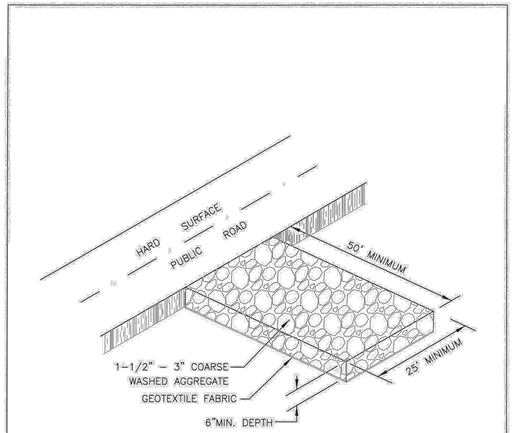


SHAKOPEE	SILT FENCE	APPROVED:	DETAIL NO:
		REVISION DATE: JANUARY 2007	2001
		SHAKOPEE ENGINEERING DEPARTMENT	



NOTE:
SILT FENCE SHALL CONFORM TO THE REQUIREMENTS OF (MN/DOT 3886)

SHAKOPEE	INLET PROTECTION PREASSEMBLED	APPROVED:	DETAIL NO:
		REVISION DATE: JANUARY 2007	2004
		SHAKOPEE ENGINEERING DEPARTMENT	



SHAKOPEE	ROCK CONSTRUCTION ENTRANCE	APPROVED:	DETAIL NO:
		REVISION DATE: MAY 2010	2006
		SHAKOPEE ENGINEERING DEPARTMENT	

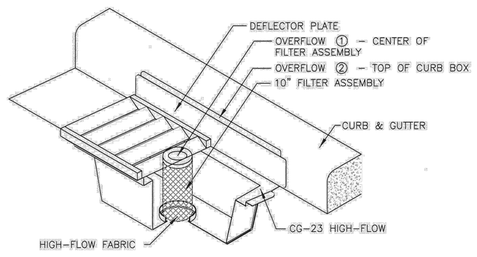
ROAD DRAIN – CURB & GUTTER MODEL #CG 3067V
AS MANUFACTURED BY:
WIMCO LLC., SHAKOPEE, MN.,
ESS BROS., LORETTO, MN., OR APPROVED EQUAL

SPECIFICATIONS AND STANDARDS

- AISC MANUAL OF STEEL CONSTRUCTION, 9TH EDITION.
- AWS STRUCTURAL WELDING CODE – STEEL, D1.1-94.
- 29 CFR 1926 – OSHA SAFETY AND HEALTH STANDARDS

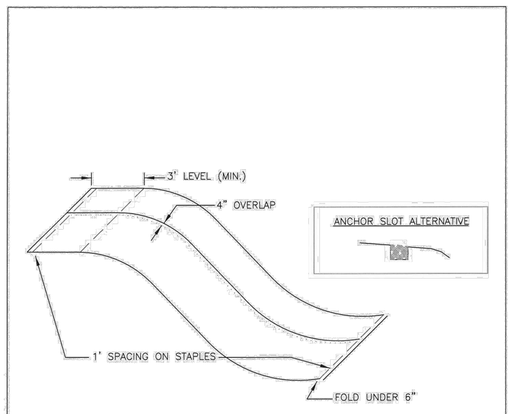
DESIGN LOADS

WATER FLOW RATE (THROUGH TYPE FF FILTER)	0.707 cfs @ 3" head
MAXIMUM OVERFLOW RATE	5.94 cfs @ 15" head



NOTE:
Clean filter media after each rain event and replace if filter is clogged with sediment.
Remove debris/sediment from receptacle after each rain event.

SHAKOPEE	INLET PROTECTION SYSTEM	APPROVED:	DETAIL NO:
		REVISION DATE: MAY 2010	2007
		SHAKOPEE ENGINEERING DEPARTMENT	



SHAKOPEE	EROSION CONTROL BLANKET	APPROVED:	DETAIL NO:
		REVISION DATE: JANUARY 2007	2008
		SHAKOPEE ENGINEERING DEPARTMENT	

REV. NO.	DATE	BY	CHK	DESCRIPTION

0 30 60
SCALE FEET

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

NAME Timothy R. Arvidson LIC. NO. 25502 DATE 5-3-2018

DESIGNED	TRH
DRAWN	TRH
CHECKED	TRA

Stonebrooke Engineering Responsible Solutions™

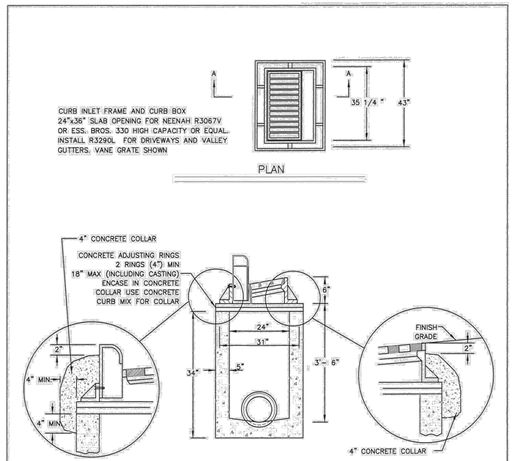
STANDARD DETAILS

PLAN PAGE 1 OF 3

UNIVERSAL BUSINESS CENTER

SHEET 8 OF 10

May 03, 2018 - 2:49pm - S:\PROJECTS\CIVIL\0044_Mesenbrink_Const\C-00682\Surveys\CADD_Files\Production Drawings\00682_STANDARD DETAIL_PLAN_SHEET.dwg



CURB INLET FRAME AND CURB BOX
24"x36" SLAB OPENING FOR NEENAH R3067V
OR ESS. BROS. 330 HIGH CAPACITY OR EQUAL.
INSTALL R3290L FOR DRIVEWAYS AND VALLEY
GUTTERS. VANE GRATE SHOWN

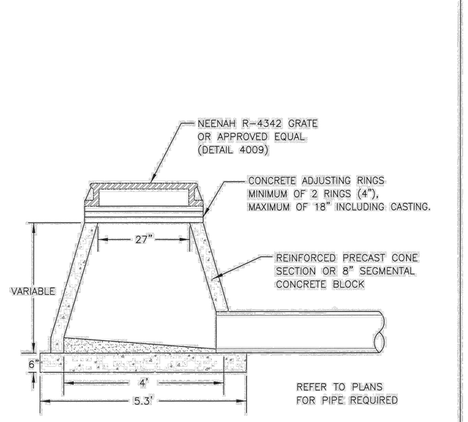
NOTES:

MINIMUM REINFORCING SHALL BE WIRE FABRIC HAVING AN AREA OF NOT LESS THAN 0.12 SQ IN PER FOOT IN BOTH DIRECTIONS

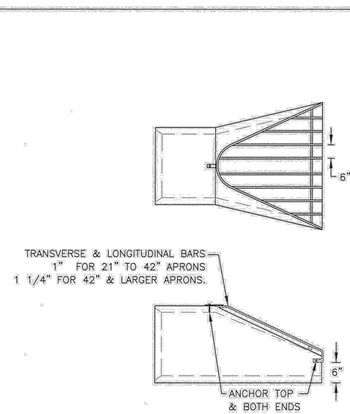
POUR A 3" TO 4" CONCRETE COLLAR AROUND RINGS EXTENDING FROM THE CASTING TO THE PRECAST SECTION

REFER TO PLANS FOR PIPE REQUIRED

SHAKOPEE	2' x 3' CATCH BASIN	APPROVED:	DETAIL NO:
		REVISION DATE: MAY 2010	4002
		SHAKOPEE ENGINEERING DEPARTMENT	



SHAKOPEE	27" CATCH BASIN	APPROVED:	DETAIL NO:
		REVISION DATE: JANUARY 2007	4004
		SHAKOPEE ENGINEERING DEPARTMENT	



NOTE:

ALL TRASH GUARDS SHALL BE GALVANIZED AFTER FABRICATION PER MNDOT SPEC. 3392 & 3394.

TIE LAST 3 PIPE JOINTS. USE 2 GALVANIZED TIE BOLT FASTENERS PER JOINT. INSTALL AT 60° FROM TOP TO BOTTOM OF PIPE.

SHAKOPEE	TRASH GUARD FOR END SECTION	APPROVED:	DETAIL NO:
		REVISION DATE: JANUARY 2007	4006
		SHAKOPEE ENGINEERING DEPARTMENT	

TABLE OF QUANTITIES

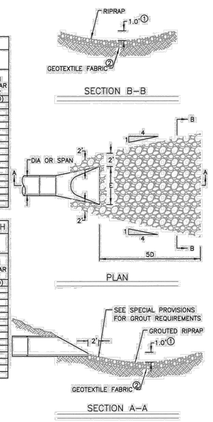
RIPRAP AT RCP OUTLETS

DIA ROUND PIPE	CLASS III, D 50= 9" 15" DEPTH RIPRAP (CU. YD)	CLASS III, D 50= 9" 7.5" DEPTH GRANULAR FILTER (CU. YD)	CLASS IV, D 50= 12" 18" DEPTH RIPRAP (CU. YD)	CLASS IV, D 50= 12" 9" DEPTH GRANULAR FILTER (CU. YD)	CLASS V, D 50= 15" 24" DEPTH RIPRAP (CU. YD)	CLASS V, D 50= 15" 12" DEPTH GRANULAR FILTER (CU. YD)
(IN)	(CU. YD)	(CU. YD)	(CU. YD)	(CU. YD)	(CU. YD)	(CU. YD)
12	2.1	1.1	3.5	1.7	5.4	2.7
15	2.9	1.4	4.5	2.2	6.8	3.4
18	3.6	1.8	5.4	2.7	8.2	4.1
21	4.6	2.3	6.8	3.4	9.7	4.9
24	5.8	2.9	8.2	4.0	11.2	5.6
27	6.9	3.4	9.3	4.7	13.0	6.5
30	8.3	4.1	9.9	5.0	13.2	6.6
36	11.0	5.5	13.2	6.6	17.6	8.8
42	13.8	6.8	16.4	8.2	21.8	10.9
48	18.8	8.4	20.1	10.1	26.8	13.4
54	19.8	9.9	23.7	11.9	31.6	15.8
60	23.0	11.5	27.6	13.8	36.8	18.4
66	27.0	13.5	32.4	16.2	43.2	21.6
72	31.1	15.6	37.4	18.7	49.8	24.9
84	40.0	20.0	48.0	24.0	64.0	32.0
90	45.5	22.8	54.8	27.3	72.8	36.4

RIPRAP AT RCP-A OR BOXES OF EQUIVALENT SPAN WIDTH

SPAN/ ROUND PIPE	CLASS III D 50= 9" 15" DEPTH RIPRAP (CU. YD)	CLASS III D 50= 9" 7.5" DEPTH GRANULAR FILTER (CU. YD)	CLASS IV D 50= 12" 18" DEPTH RIPRAP (CU. YD)	CLASS IV D 50= 12" 9" DEPTH GRANULAR FILTER (CU. YD)	CLASS V D 50= 15" 24" DEPTH RIPRAP (CU. YD)	CLASS V D 50= 15" 12" DEPTH GRANULAR FILTER (CU. YD)
(IN)	(CU. YD)	(CU. YD)	(CU. YD)	(CU. YD)	(CU. YD)	(CU. YD)
22	3.8	1.9	4.4	2.2	5.8	2.9
28	5.6	2.7	6.2	3.0	8.2	4.0
35	8.1	4.1	9.3	4.9	13.0	6.5
41	11.0	5.5	12.4	6.5	17.6	8.8
53	13.0	6.4	15.4	8.0	21.8	10.7
58	18.5	8.5	19.3	9.6	26.4	13.2
65	19.8	9.5	23.7	11.9	31.6	15.8
73	23.5	11.6	27.9	14.0	37.2	18.6
80	32.4	16.2	36.9	19.2	51.8	25.9
102	43.5	21.8	52.2	25.1	69.6	34.8
115	44.0	22.0	52.8	26.4	70.4	35.2
122	49.3	24.6	59.1	29.8	78.8	39.4
138	61.3	30.6	73.5	36.8	98.0	49.0
154	74.4	37.2	89.3	44.8	119.0	59.5

NOTE:
REQUIREMENTS FOR RIPRAP SIZE, THICKNESS, WILL BE DESIGNATED IN PLANS.

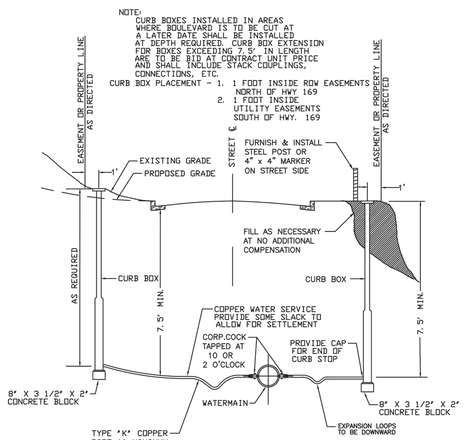


① FOR PIPES GREATER THAN OR EQUAL TO 48", USE 2.0'

② THE FABRIC SHOULD COVER THE AREA OF THE RIPRAP AND EXTEND UNDER THE CULVERT APRON 3 FEET.

TIE LAST 3 PIPE JOINTS. USE 2 TIE BOLT FASTENERS PER JOINT.

SHAKOPEE	RIPRAP DETAIL	APPROVED:	DETAIL NO:
		REVISION DATE: JANUARY 2007	4010
		SHAKOPEE ENGINEERING DEPARTMENT	



TYPICAL WATER SERVICE CONNECTION
NO SCALE

Shakopee Public Utilities	Shakopee Public Utilities Commission Details For Watermain Construction	WAT - 003				
		ADOPTED	REV.		DESIGN	
		SPUC	DATE	APP'D	DRAWN	SNM
		RES. # 1075			APP'D	JDA
		08-04-14				

REV. NO.	DATE	BY	CHK	DESCRIPTION

0 30 60
SCALE FEET

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

NAME Timothy R. Arvidson LIC. NO. 25502 DATE 5-3-2018

DESIGNED	DRAWN	CHECKED
TRH	TRH	TRA

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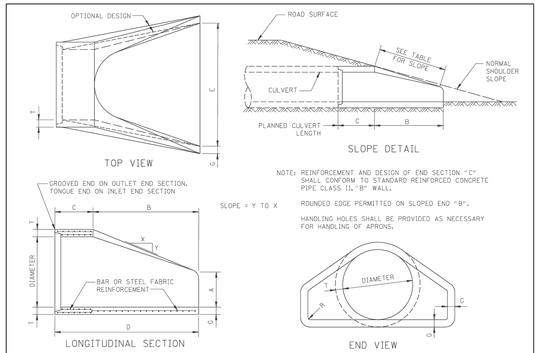
STANDARD DETAILS

PLAN PAGE 2 OF 3

UNIVERSAL BUSINESS CENTER

SHEET 9 OF 10

May 03, 2018 - 2:57pm - S:\PROJECTS\CIVIL\0044_Mesenbrink_Const\C-00682\Surveys\CADD_Files\Production Drawings\00682_STANDARD DETAIL_PLAN_SHEET.dwg



NOTE: REINFORCEMENT AND DESIGN OF END SECTION "C" SHALL CONFORM TO STANDARD REINFORCED CONCRETE PIPE CLASS II, "B" WALL.

ROUNDED EDGE PERMITTED ON SLOPED END "B".

HANDLING HOLES SHALL BE PROVIDED AS NECESSARY FOR HANDLING OF APRONS.

SLOPE = Y TO X

SEE STD PLATE 3000 FOR ADDITIONAL REQUIREMENTS

DIAM.	WEIGHT PER SECTION (LBS.)	APPROX. SLOPE Y TO X	T	A	B	C	D	E	G	R	Ⓢ
12"	530	1 TO 2.4	2"	4"	24"	48-7/8"	72-7/8"	24"	2"	1-1/2"	0.07
15"	740	1 TO 2.4	2-1/4"	6"	27"	46"	73"	30"	2-1/4"	1-1/2"	0.07
18"	990	1 TO 2.3	2-1/2"	9"	27"	46"	73"	36"	2-1/2"	1-1/2"	0.07
21"	1280	1 TO 2.4	2-3/4"	9"	36"	37-1/2"	73-1/2"	42"	2-3/4"	1-1/2"	0.07
24"	1520	1 TO 2.5	3"	9-1/2"	43-1/2"	30"	73-1/2"	48"	3"	1-1/2"	0.07
27"	1930	1 TO 2.5	3-1/4"	10-1/2"	49-1/2"	24"	73-1/2"	54"	3-1/4"	1-1/2"	0.13
30"	2190	1 TO 2.5	3-1/2"	12"	54"	19-3/4"	73-3/4"	60"	3-1/2"	1-1/2"	0.14
36"	4100	1 TO 2.5	4"	15"	63"	34-3/4"	97-3/4"	72"	4"	1-1/2"	0.12
42"	5380	1 TO 2.5	4-1/2"	21"	63"	35"	98"	78"	4-1/2"	1-1/2"	0.15
48"	6550	1 TO 2.5	5"	24"	72"	26"	98"	84"	5"	1-1/2"	0.18
54"	8240	1 TO 2.0	5-1/2"	27"	65"	33-1/4"	98-1/4"	90"	5-1/2"	1-1/2"	0.22
60"	8730	1 TO 1.9	6"	33"	60"	39"	99"	96"	5"	1-1/2"	0.25
66"	10710	1 TO 1.7	6-1/2"	30"	72"	27"	99"	102"	5-1/2"	1-1/2"	0.31
72"	12520	1 TO 1.8	7"	36"	78"	21"	99"	108"	6"	1-1/2"	0.35
78"	14770	1 TO 1.8	7-1/2"	36"	90"	21"	111"	114"	6-1/2"	1-1/2"	0.40
84"	18160	1 TO 1.6	8"	36"	90-1/2"	21"	111-1/2"	120"	6-1/2"	1-1/2"	0.46
90"	20900	1 TO 1.5	8-1/2"	41"	87-1/2"	24"	111-1/2"	132"	6-1/2"	6"	0.51

Ⓢ CONTINUOUS BASIC REINFORCEMENT IN SQ. IN. PER LINEAL FT. FOR SLOPED END "B" (LARGER OF INNER OR OUTER CAGE ON STD. PLATE 3000 J). FOR WALL THICKNESSES LESS THAN 4", LOCATE REINFORCEMENT AT THE CENTER OF WALL. FOR WALL THICKNESSES 4" AND GREATER, LOCATE REINFORCEMENT WITH A MIN. OF 2" OF COVER MEASURED FROM THE OUTSIDE OF THE WALL.

NOTE: UNLESS SPECIFIED OTHERWISE IN THE PLANS, WHEN AN APRON IS REQUIRED FOR A RUN OF GASKET PIPE (STD. PLATE 3006), THE PRODUCER MAY FURNISH EITHER:
1. AN APRON WITH A STD. PLATE 3006 JOINT, OR
2. AN APRON WITH A STD. PLATE 3000 JOINT AND THE END OF THE STD. PLATE 3006 PIPE CONNECTING TO THE APRON PROVIDED WITH A STD. PLATE 3000 JOINT. THIS JOINT IS TO BE SEALED WITH A PREFORMED MASTIC SEALER.

APPROVED May 8, 1985
RH Sulbri
Assistant Division Director Technical Services

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
CONCRETE APRON FOR REINFORCED CONCRETE PIPE

SPECIFICATION REFERENCE: 2501, 2503
REVISED 10-16-2000 A.K.J.

STANDARD PLATE NO. 3100G

INTERNAL DIA. OF PIPE (INCHES)	WEIGHT PER LIN. FT. OF PIPE	CLASS I	CLASS II	CLASS III	CLASS IV	CLASS V
		D - LOAD TO PRODUCE A 0.01 INCH CRACK (LBS./LIN. FT./FT. OF DIA.)				3000
		800	1000	1350	2000	3000
		D - LOAD TO PRODUCE ULTIMATE LOAD (LBS./LIN. FT./FT. OF DIA.)				
		1200	1500	2000	3000	3750
		CONCRETE 4000 P.S.I.	CONCRETE 4000 P.S.I.	CONCRETE 4000 P.S.I.	CONCRETE 5000 P.S.I.	CONCRETE 6000 P.S.I.
		MINIMUM REINFORCEMENT: SQUARE INCHES PER LINEAR FOOT OF BARREL				
		OUTER CAGE	INNER CAGE	OUTER CAGE	INNER CAGE	OUTER CAGE	INNER CAGE	OUTER CAGE	INNER CAGE	OUTER CAGE
D	LBS.	INCHES								
12	140	2-3/4	— ②	—	— ②	—	— ②	—	0.08 ③	—
15	180	3	— ②	—	— ②	—	— ②	—	0.08 ③	—
18	230	3-1/4	— ②	—	— ②	—	— ②	—	0.10 ③	—
21	280	3-1/2	— ②	—	— ②	—	— ②	—	0.15 ③	—
24	340	3-3/4	— ②	—	—	—	0.07	0.07	0.12	0.07
27	410	4	— ②	—	—	—	0.07	0.07	0.14	0.08
30	480	4-1/4	— ②	—	—	—	0.09	0.07	0.18	0.11
33	510	4-1/2	— ②	—	—	—	0.11	0.07	0.23	0.14
36	630	4-3/4 ⑤	0.07	0.07	0.08 ⑤	0.07	0.14	0.08	0.27	0.16
42	810	5-1/4	0.10	0.07	0.12	0.07	0.20	0.12	0.36	0.22
48	1010	5-3/4	0.14	0.08	0.16	0.10	0.26	0.16	0.47	0.28
54	1230	6-1/4	0.17	0.10	0.21	0.13	0.34	0.20	0.58	0.35
60	1470	6-3/4	0.22	0.13	0.25	0.15	0.41	0.25	0.70 ①	0.42
66	1740	7-1/4	0.25	0.15	0.31	0.19	0.51	0.31	0.84 ①	0.50
							CONCRETE 5000 P.S.I.			
72	2010	7-3/4	0.30	0.18	0.36	0.22	0.61	0.37	0.99 ①	0.59
78	2330	8-1/4	0.35	0.21	0.42	0.25	0.71	0.43		
84	2640	8-3/4	0.41	0.25	0.50	0.30	0.85	0.51		
							CONCRETE 5000 P.S.I.			
90	3000	9-1/4	0.48	0.29	0.59	0.35				
96	3370	9-3/4	0.55	0.33	0.70	0.42				
			CONCRETE 5000 P.S.I.							
102	3760	10-1/4	0.62	0.37	0.83	0.50				
108	4170	10-3/4	0.70	0.42	0.99	0.59				

NOTES:
SEE SHEET 1 OF 5 FOR ADDITIONAL INFORMATION ON PIPE SECTIONS AND GENERAL NOTES.
STANDARD PLATE 3006, GASKET JOINT R.C. PIPE, MAY BE FURNISHED IN LIEU OF 3000 PIPE. THE GASKET REQUIRED FOR 3006 PIPE WILL NOT BE REQUIRED; HOWEVER, THE APPROPRIATE PROVISIONS OF THE SPECIFICATIONS RELATING TO FILLING THE JOINT SPACE WITH AN APPROVED SEALER OR FULL CIRCUMFERENTIAL WRAP OF GEOTEXTILE MATERIAL SHALL APPLY.
① CLASS IV PIPE 78 INCHES OR MORE IN DIAMETER AND CLASS V PIPE 54 INCHES OR MORE IN DIAMETER ARE SPECIAL DESIGNS AND REQUIRE SHEAR STEEL.
② FOR THESE CLASSES AND SIZES, THE MINIMUM PRACTICAL STEEL REINFORCEMENT IS SPECIFIED. THE ACTUAL ULTIMATE STRENGTH IS GREATER THAN THE MINIMUM STRENGTH SPECIFIED FOR NONREINFORCED PIPE OF EQUIVALENT DIAMETERS IN AASHTO M86.
③ AS AN ALTERNATIVE, FOR CLASS II AND III A SINGLE CAGE REINFORCEMENT MAY BE USED. THE REINFORCEMENT AREA IN SQUARE INCHES PER LINEAR FOOT SHALL BE 0.20 FOR WALL C.
④ 35 TO 50 PERCENT OF T EXCEPT WHEN WALL THICKNESS IS LESS THAN 3-1/2 INCHES-THEN 3/4 INCHES OF COVER.
⑤ SINGLE LINE REINFORCEMENT.

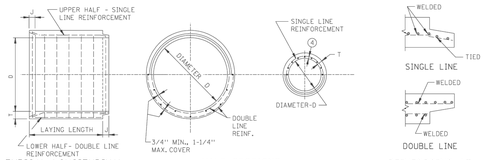
APPROVED Aug. 31, 1989
RH Sulbri
Director Materials, Research and Standards

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
REINFORCED CONCRETE PIPE
B WALL

SPECIFICATION REFERENCE: 2501, 2502, 2503
REVISED 4-30-99 A.K.J.

STANDARD PLATE NO. 3000L 1 OF 5

INTERNAL DIA. OF PIPE (INCHES)	WEIGHT PER LIN. FT. OF PIPE	CLASS II	CLASS III	CLASS IV	CLASS V
		D - LOAD TO PRODUCE A 0.01 INCH CRACK (POUNDS PER LIN. FT. PER FT. OF DIA.)			
		1000	1350	2000	3000
		D - LOAD TO PRODUCE ULTIMATE LOAD (LBS. PER LIN. FT. PER FT. OF DIA.)			
		1500	2000	3000	3750
		CONCRETE 4000 P.S.I.	CONCRETE 4000 P.S.I.	CONCRETE 4000 P.S.I.	CONCRETE 4000 P.S.I.
		MINIMUM REINFORCEMENT SQUARE INCHES PER LINEAL FOOT OF BARREL ①			
D	LBS.	INCHES			
12	140	2-3/4	— ②	— ②	— ②	0.08 ③	—
15	180	3	— ②	— ②	— ②	0.08 ③	—
18	230	3-1/4	— ②	— ②	— ②	0.10 ③	—
21	280	3-1/2	— ②	— ②	— ②	0.15 ③	—
24	340	3-3/4	— ②	—	0.07	0.07	0.12	0.07
27	410	4	— ②	—	0.07	0.07	0.14	0.08
30	480	4-1/4	— ②	—	0.09	0.07	0.18	0.11
33	510	4-1/2	— ②	—	0.11	0.07	0.23	0.14
36	630	4-3/4 ⑤	0.07	0.07	0.08 ⑤	0.07	0.14	0.08	0.27	0.16
42	810	5-1/4	0.10	0.07	0.12	0.07	0.20	0.12	0.36	0.22
48	1010	5-3/4	0.14	0.08	0.16	0.10	0.26	0.16	0.47	0.28
54	1230	6-1/4	0.17	0.10	0.21	0.13	0.34	0.20	0.58	0.35
60	1470	6-3/4	0.22	0.13	0.25	0.15	0.41	0.25	0.70 ①	0.42
66	1740	7-1/4	0.25	0.15	0.31	0.19	0.51	0.31	0.84 ①	0.50
						CONCRETE 5000 P.S.I.				
72	2010	7-3/4	0.30	0.18	0.36	0.22	0.61	0.37	0.99 ①	0.59
78	2330	8-1/4	0.35	0.21	0.42	0.25	0.71	0.43		
84	2640	8-3/4	0.41	0.25	0.50	0.30	0.85	0.51		
						CONCRETE 5000 P.S.I.				
90	3000	9-1/4	0.48	0.29	0.59	0.35				
96	3370	9-3/4	0.55	0.33	0.70	0.42				
			CONCRETE 5000 P.S.I.							
102	3760	10-1/4	0.62	0.37	0.83	0.50				
108	4170	10-3/4	0.70	0.42	0.99	0.59				



NOTES:
SEE SHEET 5 OF 5 FOR ADDITIONAL INFORMATION ON C WALL PIPE SECTIONS AND GENERAL NOTES.
STANDARD PLATE 3006, GASKET JOINT R.C. PIPE, MAY BE FURNISHED IN LIEU OF 3000 PIPE. THE GASKET REQUIRED FOR 3006 PIPE WILL NOT BE REQUIRED; HOWEVER, THE APPROPRIATE PROVISIONS OF THE SPECIFICATIONS RELATING TO FILLING THE JOINT SPACE WITH AN APPROVED SEALER OR FULL CIRCUMFERENTIAL WRAP OF GEOTEXTILE MATERIAL SHALL APPLY.
① AN INNER CIRCULAR CAGE PLUS AN ELLIPTICAL CAGE SUCH THAT THE AREA OF THE ELLIPTICAL CAGE SHALL NOT BE LESS THAN THAT SPECIFIED FOR THE OUTER CAGE IN THE TABLE AND THE TOTAL AREA OF THE INNER CIRCULAR CAGE PLUS THE ELLIPTICAL CAGE SHALL NOT BE LESS THAN THAT SPECIFIED FOR THE INNER CAGE IN THE TABLE.
② FOR THESE CLASSES AND SIZES, THE MINIMUM PRACTICAL STEEL REINFORCEMENT IS SPECIFIED. THE ACTUAL ULTIMATE STRENGTH IS GREATER THAN THE MINIMUM STRENGTH SPECIFIED FOR NONREINFORCED PIPE OF EQUIVALENT DIAMETERS IN AASHTO M86.
③ AS AN ALTERNATIVE, FOR CLASS II AND III A SINGLE CAGE REINFORCEMENT MAY BE USED. THE REINFORCEMENT AREA IN SQUARE INCHES PER LINEAR FOOT SHALL BE 0.20 FOR WALL C.
④ 35 TO 50 PERCENT OF T EXCEPT WHEN WALL THICKNESS IS LESS THAN 3-1/2 INCHES-THEN 3/4 INCHES OF COVER.
⑤ SINGLE LINE REINFORCEMENT.

APPROVED Aug. 31, 1989
RH Sulbri
Director Materials, Research and Standards

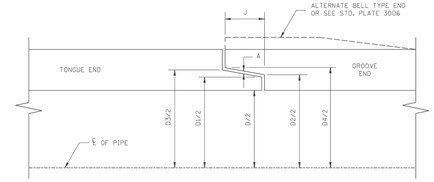
STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
REINFORCED CONCRETE PIPE
C WALL

SPECIFICATION REFERENCE: 2501, 2502, 2503
REVISED 4-30-99 A.K.J.

STANDARD PLATE NO. 3000L 2 OF 5

INTERNAL DIAMETER OF PIPE IN INCHES	CROSS SECTION WATER AREA	LENGHT OF JOINT	NOMINAL - A				
		L		D1	D2	D3	D4
D	SQ. FT.		INCHES				
12	0.79	1-3/4	3/16	13-1/4	13-5/8	13-7/8	14-1/4
15	1.23	2	3/16	16-1/2	16-7/8	17-1/4	17-5/8
18	1.77	2-1/4	3/16	19-5/8	20	20-3/8	20-3/4
21	2.40	2-1/2	3/16	22-7/8	23-1/4	23-3/4	24-1/8
24	3.14	2-3/4	3/16	26	26-3/8	27	27-3/8
27	3.98	3	3/16	29-1/4	29-5/8	30-1/4	30-5/8
30	4.91	3-1/4	3/16	32-3/8	32-3/4	33-1/2	33-7/8
33	5.94	3-1/2	1/4	35-1/2	36	36-3/4	37-1/4
36	7.07	3-3/4	1/4	38-3/4	39-1/4	40	40-1/2
42	9.62	4	1/4	45-1/8	45-5/8	46-1/2	47
48	12.57	4-1/4	1/4	51-1/2	52	53	53-1/2
54	15.90	4-1/2	1/4	57-7/8	58-3/8	59-3/8	59-7/8
60	19.63	5	1/4	64-1/4	64-3/4	66	66-1/2
66	23.76	5-1/2	1/4	70-5/8	71-1/8	72-1/2	73
72	28.27	6	1/4	77	77-1/2	79	79-1/2
78	33.18	6-1/2	1/4	83-3/8	83-7/8	85-5/8	86-1/8
84	38.48	7	1/4	89-3/4	90-1/4	92-1/8	92-5/8
90	44.18	7	1/4	95-3/4	96-1/4	98-1/8	98-5/8
96	50.27	7	1/4	102-1/8	102-5/8	104-1/2	105
102	56.75	7-1/2	1/4	109	109-1/2	111-1/2	112
108	63.62	7-1/2	1/4	115-1/2	116	118	118-1/2

TOLERANCES IN DIMENSIONS:
D: ± 1.5% FOR 12" TO 24" D, ± 1% OR 3/8" WHICHEVER IS GREATER FOR 27" TO 108" D.
D1, D2, D3, AND D4: ± 3/16" FOR 12" TO 30" D, ± 1/4" FOR 33" TO 108" D.
T: NOT LESS THAN THE DESIGN T BY MORE THAN 5% OR 3/16" WHICHEVER IS GREATER.
J: ALL SIZES ± 1/4".
LAYING LENGTH SHALL NOT UNDERRUN BY MORE THAN 1/2".

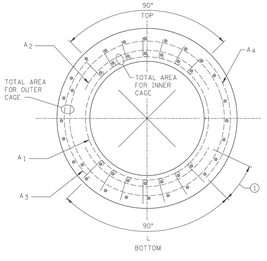


APPROVED Aug. 31, 1989
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STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
REINFORCED CONCRETE PIPE
JOINT DIMENSIONS FOR B-WALL AND C-WALL

SPECIFICATION REFERENCE: 2501, 2502, 2503

STANDARD PLATE NO. 3000L 3 OF 5



CROSS SECTION FOR SPECIAL DESIGN PIPES

NOTES:
SEE SHEET 1 FOR INNER AND OUTER CAGE REINFORCEMENT.
$A_1 + A_2$ = TOTAL INNER CAGE REINFORCEMENT.
$A_3 + A_4$ = TOTAL OUTER CAGE REINFORCEMENT.
POINT OR INDENT LEGIBLE MARKS AT ONE END OF EACH SECTION ON THE INSIDE AND OUTSIDE OF OPPOSITE WALLS DESIGNATING THE CENTER OF STIRRUP REINFORCEMENT.
THE TOP OF THE PIPE SHALL BE APPROPRIATELY MARKED OR STENCILED BOTH ON THE INSIDE AND OUTSIDE SURFACES.
① THE CAGES MUST BE ASSEMBLED WITH THE OUTER MAT OVERLAPPING THE INNER MAT BY A DISTANCE EQUAL TO ONE PIPE WALL THICKNESS OR GREATER.
A_1 = REINFORCING OF FULL CIRCULAR INNER CAGE.
A_2 = REINFORCING OF INNER LAP SECTION, 90° MINIMUM ARC.
A_3 = REINFORCING OF FULL CIRCULAR OUTER CAGE.
A_4 = REINFORCING OF OUTER LAP SECTION, 90° MINIMUM ARC.
A_r = MINIMUM RADIAL REINFORCING REQUIRED IN SQUARE INCHES PER SQUARE FOOT OF PIPE OVER A MINIMUM 90° ARC AT TOP AND BOTTOM OF PIPE. HOOK DESIGN MUST BE APPROVED BY MATERIALS SECTION.
THE FULL CIRCULAR CAGES MUST HAVE AN AREA EQUAL TO AT LEAST 40% OF THE REQUIRED TOTAL AREA.
L = LENGTH OF 90° ARC MEASURED AT INNER CAGE.
N = MINIMUM NUMBER OF ROWS OF RADIAL REINFORCING AT TOP AND BOTTOM OF PIPE.
S = MAXIMUM CIRCUMFERENTIAL SPACING OF ROWS OR RADIAL REINFORCING AT OUTER CAGE.

INTERNAL DIA. OF PIPE	LENGTH OF 90° ARC	WALL THICKNESS	SHEAR STEEL					
			CLASS IV			CLASS V		
D	L	T	N	S	A_r	N	S	A_r
54"	44"	5-1/2"	—	—	—	12	4"	0.22
60"	49"	6"	—	—	—	10	6"	0.22
66"	54"	6-1/2"	—	—	—	10	6"	0.22
72"	59"	7"	—	—	—	11	6"	0.23
78"	63"	7-1/2"	12	6"	0.25	12	6"	0.25
84"	68"	8"	13	6"	0.28	13	6"	0.28
90"	73"	8-1/2"	13	6"	0.31	13	6"	0.31
96"	77"	9"	14	6"	0.34	14	6"	0.34
102"	82"	9-1/2"	15	6"	0.37	15	6"	0.37
108"	87"	10"	16	6"	0.40	16	6"	0.40

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STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
REINFORCED CONCRETE PIPE
REINFORCEMENT INFORMATION
SPECIAL DESIGN PIPES

SPECIFICATION REFERENCE: 2501, 2502, 2503

STANDARD PLATE NO. 3000L 4 OF 5

REINFORCEMENT:
REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS AASHTO M 170.
IF THE SPLICES ARE NOT WELDED, CIRCUMFERENTIAL REINFORCEMENT SHALL BE LAPPED NOT LESS THAN 20 DIAMETERS FOR DEFORMED BARS AND DEFORMED COLD-WORKED WIRE, AND 40 DIAMETERS FOR PLAIN BARS AND COLD-DRAWN WIRE. IN ADDITION, WHERE LAPPED CAGES OF WELDED-WIRE FABRIC ARE USED WITHOUT WELDING, THE LAP SHALL CONTAIN A LONGITUDINAL WIRE. ALL CIRCULAR AND LONGITUDINAL REINFORCEMENT SHALL BE ASSEMBLED AND SECURELY FASTENED CAGE FASHION SO AS TO MAINTAIN REINFORCEMENT IN EXACT SHAPE AND CORRECT POSITION WITHIN THE FORM.
REINFORCEMENT WILL BE CONSIDERED AS MEETING THE DESIGN REQUIREMENTS IF THE AREA, COMPUTED ON THE BASIS OF NOMINAL AREA OF THE WIRE OR BARS USED, EQUALS OR EXCEEDS THE ABOVE REQUIREMENT. ACTUAL AREA OF THE REINFORCING USED MAY VARY FROM THE NOMINAL AREA ACCORDING TO PERMISSIBLE VARIATIONS OF THE STANDARD SPECIFICATIONS FOR THE REINFORCING.
THE COVER OVER THE CIRCUMFERENTIAL STEEL SHALL BE AS SHOWN ON THIS PLATE BUT IN NO CASE SHALL THE COVER BE LESS THAN 3/4 INCHES AS MEASURED TO THE INSIDE WALL SURFACE OR THE OUTSIDE WALL SURFACE, EXCEPT IN THE TONGUE AND GROOVE, REINFORCING STEEL MAY BE OMITTED FROM EITHER THE TONGUE OR GROOVE ENDS OF 12 INCH THRU 33 INCH DIAMETER PLAIN ROUND PIPE ONLY OF B WALL SINGLE CAGE. BELL ENDS WITH O-RING GASKETS SHALL HAVE REINFORCEMENT IN THEM.
THE SPACING CENTER TO CENTER OF ADJACENT RINGS OF CIRCUMFERENTIAL REINFORCEMENT IN A CAGE SHALL NOT EXCEED 4 INCHES FOR PIPE UP TO AND INCLUDING PIPE HAVING A 4 INCH WALL. THICKNESS NOR EXCEED THE WALL THICKNESS FOR LARGER PIPE, AND SHALL IN NO CASE EXCEED 6 INCHES. THE CONTINUITY OF THE CIRCUMFERENTIAL REINFORCING STEEL SHALL NOT BE DESTROYED DURING THE MANUFACTURE OF THE PIPE.

GENERAL NOTES:
THE STRENGTH TEST REQUIREMENTS IN POUNDS-FORCE PER LINEAL FOOT OF PIPE UNDER THE THREE-EDGE-BEARING METHOD SHALL BE COMPUTED BY MULTIPLYING THE INTERNAL DIAMETER OF THE PIPE IN FEET BY THE D-LOADS (EXPRESSED IN POUNDS-FORCE PER LINEAL FOOT OF DIAMETER) TO PRODUCE THE 0.01 INCH CRACK AND THE ULTIMATE LOAD SPECIFIED ON SHEETS 1 AND 5 OF THIS STANDARD PLATE.
PIPES 60 INCHES IN DIAMETER OR GREATER AND ALL CENTER LINE CULVERTS SHALL HAVE TIED JOINTS.
NOT MORE THAN TWO LIFT HOLES WILL BE PERMITTED IN EACH SECTION OF PIPE. TAPERED PLUGS SHALL BE FURNISHED FOR CLOSING LIFT HOLES.
GASKET LUBRICATION SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS.

LAYING LENGTH:
THE NOMINAL LAYING OF ALL PIPE SHALL NOT BE LESS THAN 6 FEET EXCEPT THAT NOT MORE THAN TWO 4 FOOT LENGTHS OF PIPE WILL BE PERMITTED IN A LINE OF PIPE TO MAKE THE REQUIRED TOTAL LENGTH. FOR ALL DIAMETERS OF PIPE ONE SECTION OF ANY ODD LENGTH GREATER THAN 4 FEET WILL BE PERMITTED IN EACH LINE OR REACH OF PIPE TO MAKE THE REQUIRED TOTAL LENGTH. PIPE SECTIONS SHORTER THAN THE NOMINAL LAYING LENGTH SHALL BE INSTALLED NEAR THE MIDDLE OF THE LINE OR AS DIRECTED BY THE ENGINEER.

BASIS FOR DESIGN: AASHTO M170

APPROVED Aug. 31, 1989
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STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
REINFORCED CONCRETE PIPE
GENERAL NOTES

SPECIFICATION REFERENCE: 2501, 2502, 2503

STANDARD PLATE NO. 3000L 5 OF 5

REV. NO.	DATE	BY	CHK	DESCRIPTION

0 30 60
SCALE FEET

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
NAME Timothy R. Arvidson LIC. NO. 25502 DATE 5-3-2018

DESIGNED TRH
DRAWN TRH
CHECKED TRA

Stonebrooke Engineering Responsible Solutions™

STANDARD DETAILS
PLAN PAGE 3 OF 3
UNIVERSAL BUSINESS CENTER

SHEET 10 OF 10

May 03, 2018 - 2:52pm - S:\PROJECTS\CIVIL\0044_Mesenbrink_Const\C-00682\Surveys\CADD_Files\Production Drawings\00682_S