

**WENCK**

7500 OLSON MEMORIAL HWY  
SUITE 300  
GOLDEN VALLEY, MN 55427  
PHONE: 763-252-6800  
FAX: 952-831-1288  
WWW.WENCK.COM

CITY OF CRYSTAL

4141 DOUGLAS DRIVE NORTH  
CRYSTAL, MN 55422:

KENTUCKY AVE WATER  
QUALITY IMPROVEMENT

CITY OF CRYSTAL  
HENNEPIN COUNTY, MINNESOTA

PROJECT TITLE:

ISSUE NO.:  
0

DESCRIPTION:  
BID PLANS

DRAWN BY:  
04/15/2020

CHECKED BY:  
MJS

APPROVED BY:  
BKF

DATE:  
04/15/2020

CERTIFICATION:  
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.

LICENSE NO.: 25817

DATE: 04/15/2020

PROJECT NO.: 1886-0010

DWN BY: CHKD BY: APP'D BY:

ISSUE DATE: 04/15/2020

ISSUE NO.: 0

SHEET TITLE:  
COVER SHEET

SHEET NO.:  
C-001



GOVERNING SPECIFICATIONS

- 1. THE PROJECT SPECIFICATION
- 2. CITY OF CRYSTAL STANDARD SPECIFICATIONS.
- 3. MINNESOTA DEPARTMENT OF TRANSPORTATION (MNDOT) "STANDARD SPECIFICATIONS FOR CONSTRUCTION" LATEST EDITION AND SUPPLEMENTS.
- 4. CITY ENGINEERS ASSOCIATION OF MINNESOTA (CEAM) STANDARD SPECIFICATIONS FOR UTILITIES LATEST EDITION.
- 5. MINNESOTA PLUMBING CODE.
- 6. APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES.

GENERAL NOTES

- 1. CONTRACTOR SHALL ALLOW AND PROVIDE ACCESS TO THE PARKING LOT FROM KENTUCKY AVENUE THROUGH OUT THE DURATION OF THE PROJECT, INCLUDING MINIMUM 20 PAVED OFF-STREET PARKIGN STALLS FOR THE ADJACENT OFFICE BUILDING.
- 2. SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CHASCE 38-2 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA". EXACT LOCATION/DEPTH OF SUBSURFACE UTILITIES SUCH AS GAS, TELEPHONE, FIBER OPTIC, SEWER, WATER, PIPELINES, ELECTRICAL, AND CABLE TV ARE UNKNOWN AND THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE.
- 3. CONTRACTOR RESPONSIBLE FOR CONTACTING GOPHER STATE ONE CALL (1-800-252-1166) A MINIMUM OF 48 HOURS IN ADVANCE (EXCLUDING HOLIDAYS AND WEEKENDS) BEFORE STARTING WORK FOR LOCATIONS OF UNDERGROUND UTILITIES.
- 4. CONTRACTOR SHALL ANTICIPATE PRIVATE UTILITY CONFLICTS THROUGHOUT THE PROJECT SUB CUT AND TRENCH AREAS AND MUST COORDINATE THE RELOCATION OR PROTECTION OF EXISTING UTILITIES, OR INSTALLATION OF NEW UTILITIES WITH UTILITY OWNERS THAT MAY HAVE BURIED OR AERIAL UTILITIES WITHIN OR NEAR THE CONSTRUCTION AREA BEFORE STARTING WORK. COSTS FOR SUCH WORK, INCLUDING EXTRA TIME AND EFFORT FOR PROVISIONS NECESSARY TO WORK AROUND OR UNDER UTILITIES, IS THE RESPONSIBILITY OF THE CONTRACTOR WITH NO ADDITIONAL COST TO THE OWNER. FEES OR CHARGES WHICH ARE TO BE PAID TO THE UTILITY COMPANY, INCLUDING WORK THAT MUST BE PERFORMED BY THE UTILITY COMPANY, ARE AT NO ADDITIONAL COST TO THE OWNER. QUANTITIES ARE APPROXIMATE, AND MAY VARY TO ALLOW COMPLETION OF WORK.
- 6. WORK AND MATERIALS MUST COMPLY WITH CITY, COUNTY, STATE, AND FEDERAL (INCLUDING OSHA) REGULATIONS AND CODES.
- 7. CONTRACTOR SHALL COORDINATE WORK WITH OTHER CONTRACTORS PERFORMING WORK AT OR NEAR THE SITE. CONTRACTOR SHALL COORDINATE AND MAINTAIN STORMWATER DRAINAGE CONVEYANCE THROUGHOUT CONSTRUCTION (BOTH PIPED AND OVERLAND FLOW).
- 8. CONSTRUCTION LIMITS ARE TO PROPERTY LINE UNLESS SHOWN OR NOTED OTHERWISE. CONTRACTOR SHALL RESTRICT CONSTRUCTION ACTIVITIES TO AREAS DESIGNATED ON PLANS WITHIN THE CONSTRUCTION LIMITS.
- 9. CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING PAVEMENT, SITE FEATURES, UTILITIES, TREES, ETC., UNLESS NOTED OR SHOWN OTHERWISE.
- 10. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING CONSTRUCTION AND WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES.
- 11. CONTRACTOR MUST IMMEDIATELY NOTIFY THE OWNER AND ENGINEER OF DISCREPANCIES OR CONFLICTS IN THE CONTRACT DOCUMENTS BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS ARE TO BE MADE WITHOUT PRIOR APPROVAL FROM THE OWNER AND ENGINEER. FAILURE TO NOTIFY OWNER AND ENGINEER OF AN IDENTIFIABLE CONFLICT BEFORE PROCEEDING WITH INSTALLATION RELIEVES OWNER OF ANY OBLIGATION TO PAY FOR A RELATED CHANGE ORDER.
- 12. CONTRACTOR SHALL HAVE ONE COPY OF EACH REQUIRED CONSTRUCTION PERMIT AND ONE COPY OF THE MOST CURRENT AND COMPLETE SET OF CONSTRUCTION DOCUMENTS (INCLUDING PLANS, SPECIFICATIONS, GEOTECHNICAL REPORT AND SPECIAL CONDITIONS AND PROVISIONS) AVAILABLE AT THE PROJECT SITE AT ALL TIMES.
- 13. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR IMPLEMENTATION AND ENFORCEMENT OF SAFE WORK PRACTICES, INCLUDING, BUT NOT LIMITED TO PERSONNEL MONITORING, USE OF TRENCHING, SHEETING, AND SHORING, ; OPERATION OF EQUIPMENT; AND SAFETY OF PUBLIC DURING PROGRESS OF WORK.
- 14. CONTRACTOR SHALL PLAN FOR AND ENSURE PERSONNEL COMPLY WITH BASIC PROVISIONS OF OSHA SAFETY & HEALTH STANDARDS (29 CFR 1910) AND GENERAL CONSTRUCTION STANDARDS (29 CFR 1926) AS APPROPRIATE.
- 15. CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING SAFETY PROGRAMS IN CONNECTION WITH WORK. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS FOR SAFETY OF EMPLOYEES ON PROJECT SITE AND OTHER PERSONS AND ORGANIZATIONS WHO MAY BE AFFECTED BY THE PROJECT. CONTRACTOR'S DUTIES AND RESPONSIBILITIES FOR SAFETY IN CONNECTION WITH WORK SHALL CONTINUE UNTIL SUCH TIME AS ALL WORK IS COMPLETED, AND ENGINEER HAS ISSUED NOTICE TO CONTRACTOR THAT WORK IS COMPLETE.
- 16. CONTRACTOR SHALL DOCUMENT AND MAINTAIN AS-BUILT INFORMATION AS CONSTRUCTION PROGRESSES AND IS RESPONSIBLE FOR PROVIDING AS-BUILT DRAWINGS TO THE OWNER AS REQUIRED BY JURISDICTIONAL AGENCIES FOR CERTIFICATION.
- 17. HAZARDOUS MATERIALS, INCLUDING BUT NOT LIMITED TO OIL, GASOLINE, PAINT AND ANY HAZARDOUS SUBSTANCE MUST BE PROPERLY STORED, BY THE CONTRACTOR, INCLUDING SECONDARY CONTAINMENTS, TO PREVENT SPILLS, LEAKS OR OTHER DISCHARGE. RESTRICTED ACCESS TO STORAGE AREAS MUST BE PROVIDED TO PREVENT VANDALISM. STORAGE AND DISPOSAL OF HAZARDOUS WASTE MUST BE IN COMPLIANCE WITH MCPA REGULATIONS. CONTRACTOR SHALL REMOVE SPILL OF FUELS, OILS, OR OTHER CHEMICALS IMMEDIATELY UPON DETECTION.

REMOVAL NOTES

- 1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
- 2. CONTRACTOR SHALL OBTAIN PERMITS REQUIRED FOR DEMOLITION, REMOVAL AND DISPOSAL.
- 3. CONTRACTOR SHALL REVIEW FEATURES NOT SPECIFICALLY IDENTIFIED ON PLAN FOR SALVAGE OR REMOVAL THAT CONFLICT WITH CONSTRUCTION WITH THE ENGINEER.
- 4. UNLESS OTHERWISE NOTED, CONTRACTOR IS RESPONSIBLE FOR REMOVAL/DEMOLITION WITHIN ALL AREAS OF PROPOSED IMPROVEMENTS. REMOVAL LIMITS ARE IDENTIFIED ON THE DRAWINGS IN ANTICIPATED LOCATIONS. CONTRACTOR RESPONSIBLE FOR REMOVALS AS NECESSARY TO CONSTRUCT NEW IMPROVEMENTS AND CONFORM TO DESIGN REQUIREMENTS. ALL FACILITIES TO BE REMOVED MUST BE UNDERCUT TO SUITABLE MATERIAL AND BROUGHT TO GRADE WITH SUITABLE FILL MATERIAL IN ACCORDANCE WITH THE SPECIFICATIONS AND AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
- 5. CONTRACTOR SHALL COORDINATE REMOVAL LIMITS / EXTENTS WITH THE CITY OF CRYSTAL AND THEIR CONSULTANTS/CONTRACTORS FOR REMOVALS IDENTIFIED IN EXISTING AND PROPOSED RIGHT OF WAY
- 6. MATERIALS REMOVED/DEMOLISHED BY CONTRACTOR BECOME PROPERTY OF THE CONTRACTOR, UNLESS OTHERWISE NOTED. CONTRACTOR SHALL LOAD AND HAUL MATERIAL OFF-SITE AND PROPERLY DISPOSE OF MATERIALS IN ACCORDANCE WITH APPLICABLE REGULATIONS. CONTRACTOR MUST LEAVE THE SITE IN A CONDITION TO THE SATISFACTION OF THE OWNER AND ENGINEER.
- 7. CONTRACTOR SHALL SAWCUT FULL DEPTH AT PAVEMENT REMOVAL LIMITS WHERE PAVEMENT REMOVAL ABUTS ADJACENT PAVED SURFACE
- 8. CONTRACTOR SHALL COORDINATE UTILITY REMOVAL WORK WITH APPROPRIATE UTILITY OWNER.
- 9. CONTRACTOR SHALL SALVAGE AND REINSTALL STREET AND TRAFFIC SIGNS IN CONFLICT WITH CONSTRUCTION ACTIVITIES AS NOTED OR AS DIRECTED BY ENGINEER. IF SIGNS ARE DAMAGED DURING CONSTRUCTION, CONTRACTOR REQUIRED TO PROVIDE NEW SIGNS AT NO ADDITIONAL COST TO THE OWNER.
- 10. IN THE EVENT THAT UNKNOWN CONTAINERS OR TANKS ARE ENCOUNTERED, THE CONTRACTOR MUST CONTACT THE ENGINEER IMMEDIATELY. ALL CONTAINERS OR TANKS MUST BE DISPOSED OF PROPERLY AT A REGULATED/PERMITTED FACILITY.

TRAFFIC CONTROL NOTES

- 1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
- 2. CONTRACTOR SHALL EITHER MAINTAIN TWO LANES OF TRAFFIC OR ONE LANE OF TRAFFIC WITH FLAGGING ON KENTUCKY AVENUE WHILE THE IN-STREET CONNECTIONS ARE BEING COMPLETED
- 3. CONTRACTOR SHALL COORDINATE CONSTRUCTION STAGING, ON OR OFFSITE, AS NECESSARY TO COMPLETE THE WORK. SUBMIT A STAGING PLAN TO THE ENGINEER FOR REVIEW BEFORE STARTING WORK.
- 4. CONTRACTOR RESPONSIBLE FOR ALL TRAFFIC CONTROL. TRAFFIC CONTROL MUST BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MN MUTCD, INCLUDING LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS. SUBMIT TRAFFIC CONTROL PLAN TO ENGINEER, CITY, AND COUNTY FOR REVIEW BEFORE CONSTRUCTION RELATED ACTIVITIES. PLANS MUST COMPLY WITH APPLICABLE PERMIT REQUIREMENTS.
- 5. CONTRACTOR MUST SCHEDULE WORK IMPACTING PUBLIC STREETS ADJACENT TO THE PROJECT.

PAVING, PAVEMENT MARKING, AND SIGNAGE NOTES

- 1. CONSTRUCTION AND MATERIALS WITHIN PUBLIC RIGHT-OF-WAY MUST BE IN ACCORDANCE WITH CITY OF CRYSTAL SPECIFICATIONS AND STANDARDS. MNDOT SPECIFICATIONS AND STANDARDS APPLY IF NOT COVERED BY LOCAL OR COUNTY REGULATIONS.
- 2. SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES MUST BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND CITY OF CRYSTAL STANDARDS.
- 3. EXACT LOCATION OF PAVEMENT MARKINGS TO MATCH EXISTING.
- 4. A TOLERANCE OF 1/4 INCH UNDER OR 1/4 INCH OVER THE SPECIFIED WIDTH WILL BE ALLOWED FOR STRIPING PROVIDED THE VARIATION IS GRADUAL AND DOES NOT DETRACT FROM THE GENERAL APPEARANCE. BROKEN LINE SEGMENTS MAY VARY UP TO ONE-HALF FOOT FROM THE SPECIFIED LENGTHS OVER AND UNDER VARIATIONS ARE REASONABLY COMPENSATORY. ALIGNMENT DEVIATIONS FROM THE CONTROL GUIDE SHALL NOT EXCEED 1 INCH. MATERIAL SHALL NOT BE APPLIED OVER LONGITUDINAL JOINTS. ESTABLISHMENT OF APPLICATION TOLERANCES SHALL NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY TO COMPLY AS CLOSELY AS PRACTICABLE WITH THE PLANNED DIMENSIONS. THE ROAD SURFACE SHALL BE CLEANED AT THE DIRECTION OF THE ENGINEER JUST PRIOR TO APPLICATION. PAVEMENT CLEANING SHALL CONSIST OF AT LEAST BRUSHING WITH A ROTARY BROOM (NON-METALLIC) OR AS RECOMMENDED BY THE MATERIAL MANUFACTURER AND ACCEPTABLE TO THE ENGINEER. (INCIDENTAL)
- 6. THE PAVEMENT MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING.
- 7. OPERATIONS SHALL BE CONDUCTED ONLY WHEN THE ROAD PAVEMENT SURFACE TEMPERATURES ARE 50 DEGREES FAHRENHEIT OR GREATER.

EROSION CONTROL NOTES

- 1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
- 2. CONTRACTOR SHALL CONFORM TO AND CONDUCT INSPECTIONS IN ACCORDANCE WITH THE NPDES PERMIT AND SWPPP REQUIREMENTS.
- 3. BEFORE SITE DISTURBANCE AND AS REQUIRED AS CONSTRUCTION PROGRESSES, CONTRACTOR SHALL INSTALL, MAINTAIN, REPAIR, AND REPLACE EROSION PREVENTION MEASURES AND SEDIMENT CONTROL DEVICES (INLET PROTECTION, CONSTRUCTION ENTRANCE, SILT FENCE, EROSION CONTROL BLANKET, ETC.) IN ACCORDANCE WITH THE SWPPP, NPDES PERMIT, AND CITY, STATE, AND WATERSHED DISTRICT PERMITS.
- 4. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED DEPENDING ON SITE CONDITIONS DURING CONSTRUCTION. COORDINATE WITH ENGINEER.
- 5. CONTRACTOR SHALL STABILIZE ALL EXPOSED SOIL AREAS WITHIN THE CONSTRUCTION LIMITS WITHIN 7 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE THAT HAS TEMPORARILY (WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS) OR PERMANENTLY CEASED. STABILIZATION MUST BE INITIATED PROMPTLY. REFER TO LANDSCAPE PLANS FOR FINAL GROUND COVER MATERIALS.
- 6. CONTRACTOR SHALL REMOVE ANY SEDIMENT THAT HAS TRACKED ONTO PAVED SURFACES BOTH ON AND OFFSITE WITHIN 24 HOURS AND AS DIRECTED BY THE CITY AND/OR ENGINEER. SWEEP STREET IN ACCORDANCE WITH CITY, COUNTY, STATE AND NPDES PERMIT REQUIREMENTS.
- 7. CONTRACTOR SHALL COMPLETE CONCRETE WASH-OUT OFF-SITE OR PROVIDE SELF-CONTAINED CONCRETE READY MIX TRUCKS.
- 8. CONTRACTOR SHALL MINIMIZE DUST FROM CONSTRUCTION OPERATIONS BY PROVIDING WATER OR OTHER APPROVED METHOD ON A DAILY BASIS.
- 9. CONTRACTOR SHALL PHASE GRADING WORK TO MINIMIZE THE DURATION THAT DISTURBED SOIL IS EXPOSED.
- 10. CONTRACTOR SHALL LOCATE SOIL STOCKPILES NO LESS THAN 20 FEET FROM ROADWAYS, STORMWATER INLETS, PONDS, WETLANDS, DRAINAGE CHANNELS, AND OTHER SURFACE WATERS. IF REMAINING FOR MORE THAN 7 DAYS, STABILIZE THE STOCKPILES BY MULCHING, VEGETATED COVER, TARPS, OR OTHER MEANS IN ACCORDANCE WITH THE NPDES PERMIT. PLACE PERIMETER SEDIMENT CONTROLS AROUND STOCKPILES TO CONTROL EROSION. COVER TEMPORARY STOCKPILES LOCATED ON PAVED SURFACES IF LEFT FROM MORE THAN 24 HOURS.
- 11. CONTRACTOR SHALL REMOVE ALL EROSION CONTROL MEASURES AFTER SITE HAS BEEN STABILIZED AND VEGETATION IS ESTABLISHED AS DIRECTED BY ENGINEER. EROSION CONTROL MEASURES USED FOR CONSTRUCTION MUST NOT BE REMOVED UNTIL AUTHORIZED BY OWNER OR ENGINEER.
- 12. CONTRACTOR SHALL SUBMIT THE NOTICE OF TERMINATION AT THE COMPLETION OF THE PROJECT IN ACCORDANCE WITH THE NPDES PERMIT AND SWPPP REQUIREMENTS.
- 13. INSPECT ALL BMPS WITHIN 24 HOURS AFTER A 1/2" OR GREATER RAINFALL.

GRADING NOTES

- 1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
- 2. PROPOSED CONTOURS ARE TO FINISHED SURFACE GRADE, UNLESS NOTED OTHERWISE.
- 3. CONTRACTOR SHALL PROVIDE TOPSOIL, SEED/SOD, MULCH, AND FERTILIZER IN ACCORDANCE WITH THE LANDSCAPE PLAN/EROSION CONTROL PLAN.
- 4. THE SITE HAS NOT NECESSARILY BEEN DESIGNED TO BALANCE THE ON-SITE MATERIALS. ADDITIONAL ONSITE EXCAVATION OF SOIL MAY BE NECESSARY TO ACHIEVE THE FINAL GRADE SHOWN ON THE DRAWINGS. CONTRACTOR SHALL COORDINATE ADDITIONAL BORROW AREAS WITH OWNER AND ENGINEER.
- 5. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AND ENSURE NO PONDING IN PAVED AREAS. CONTRACTOR SHALL NOTIFY ENGINEER IF GRADING DISCREPANCIES ARE FOUND IN EXISTING OR PROPOSED GRADES PRIOR TO PLACEMENT OF PAVEMENT. OBSERVE PAVEMENT AREAS FOR EVIDENCE OF PONDING BEFORE PLACEMENT OF PAVEMENT TO ENSURE DRAINAGE IS ADEQUATE TO INTENDED AREA.
- 6. EXISTING TOPSOIL ON SITE VARIES IN DEPTH. CONTRACTOR SHALL REMOVE SURFACE VEGETATION AND TOPSOIL AND OTHER LOOSE, SOFT OR OTHERWISE UNSUITABLE MATERIAL FROM THE IMPERVIOUS AREAS AND OTHER AREAS AS DIRECTED BY THE GEOTECHNICAL ENGINEER BEFORE PLACEMENT OF FILL MATERIAL.
- 7. REFERENCE LANDSCAPE PLAN FOR MINIMUM TOPSOIL RESPREAD THICKNESS.
- 8. CONTRACTOR SHALL EXCAVATE AND DISPOSE OF UNSUITABLE OR CONTAMINATED SOILS DISCOVERED ONSITE IN ACCORDANCE WITH APPLICABLE REGULATIONS AND AS DIRECTED BY GEOTECHNICAL ENGINEER.
- 9. SOILS TESTING WILL BE COMPLETED BY THE OWNER'S GEOTECHNICAL ENGINEER. CONTRACTOR SHALL COORDINATE REQUIRED SOIL TESTS AND INSPECTIONS WITH THE GEOTECHNICAL ENGINEER.
- 10. CONTRACTOR IS RESPONSIBLE FOR MEETING GRADING/COMPACTION REQUIREMENTS OUTLINED IN THE GEOTECHNICAL REPORT AND SPECIFICATIONS FOR THE PROJECT.
- 11. ONSITE EMBANKMENT MATERIAL FREE OF ORGANIC SOIL AND DEBRIS MAY BE CONSIDERED FOR REUSE AS FILL MATERIAL BUT MUST BE APPROVED BY THE GEOTECHNICAL ENGINEER.
- 12. IMPORTED MATERIAL NEEDED MAY CONSIST OF SAND (SW, SP), SILTY SAND (SM), CLAYEY SAND (SC), SANDY LEAN CLAY OR LEAN CLAY (CL), ACCORDING TO THE USCS CLASSIFICATION WITH A PLASTIC INDEX OF THESE MATERIALS NOT EXCEEDING 15, AND MUST BE APPROVED BY THE GEOTECHNICAL ENGINEER BEFORE BRINGING ON THE SITE.
- 13. CONTRACTOR SHALL PROVIDE DEWATERING MEASURES AS REQUIRED OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
- 14. CONTRACTOR SHALL BACKFILL SUBGRADE AND TRENCH EXCAVATIONS PROMPTLY AFTER EXCAVATION TO HELP OFFSET STABILITY PROBLEMS DUE TO WATER SEEPAGE OR STEEP SLOPES AND PUBLIC SAFETY.
- 15. CONTRACTOR SHALL INSTALL A MINIMUM OF 6 INCHES CLASS 5 AGGREGATE BASE UNDER CURB AND GUTTER, SEE DETAILS.
- 16. CONTRACTOR SHALL CONSTRUCT/GRADE SIDEWALKS AND ACCESSIBLE ROUTES INCLUDING CROSSING DRIVEWAYS IN ACCORDANCE WITH CURRENT ADA STATE AND NATIONAL STANDARDS. NOTIFY ENGINEER IMMEDIATELY IF ADA CRITERIA CANNOT BE MET AT ANY LOCATION.
- 17. AGGREGATE BASE MODIFIED SPECIFICATION: RECYCLED MATERIAL SHALL CONTAIN NO MATERIAL GREATER THAN 1.5-INCHES IN NOMINAL DIAMETER AND CONTAIN NO MORE THAN 10% PASSING THE #200 SIEVE. SOIL SHALL BE COMPACTED TO AT LEAST 100% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. MOISTURE CONTENT SHALL BE KEPT WITHIN -1% TO +3% OF ITS OPTIMUM VALUE. AS MATERIAL GRADATIONS MAY CHANGE THROUGHOUT THE STOCKPILE, SEVERAL PROCTOR TESTS MAY NEED TO BE COMPLETED. SAMPLES OF EACH OF THESE MATERIALS SHALL BE KEPT ON SITE FOR COMPARISON DURING CONSTRUCTION.
- 18. AVOID COMPACTION OF SOIL IN PROPOSED STORMWATER BASIN LOCATIONS.

STORM SEWER NOTES

- 1. CONTRACTOR SHALL MAINTAIN, AT ALL TIMES, STORMWATER CONVEYANCE ONTO THE PROPERTY AND MANAGE THE STORMWATER IN STRICT COMPLIANCE WITH THE SWPPP. ADJACENT PROPERTIES AND ROW THAT RUN ONTO THE PROPERTY SHALL NOT BE NEGATIVELY IMPACTED BY THE CONSTRUCTION OF THE IMPROVEMENTS. TEMPORARY CONVEYANCE PLANS SHALL BE PROVIDED BY THE CONTRACTOR FOR REVIEW AND APPROVAL BY THE OWNER AND THE CITY OF APPLE VALLEY.
- 2. CONTRACTOR SHALL COMPLY WITH THE SPECIFICATIONS OF THE CITY OF CRYSTAL, CEAM, AND MINNESOTA PLUMBING CODE (MINNESOTA RULES CHAPTER 4714) FOR MATERIALS, INSTALLATION, AND TESTING OF STORM UTILITIES
- 3. STORM SEWER MAINS, SERVICE PIPES, AND FITTINGS TO MEET THE FOLLOWING REQUIREMENTS:
  - 3.1. SITE PIPING:
    - 3.1.1. 12 INCH DIA. AND LARGER, REINFORCED CONCRETE (RC) PIPE CLASS PER CITY SPECIFICATIONS AS NOTED ON THE PLAN.
    - 3.1.2. JOINTS: JOINTS MUST BE CERTIFIED BY THE MANUFACTURER TO BE ABLE TO PASS THE AIR TEST OR INTERNAL HYDROSTATIC PRESSURE REQUIRED BY THE AGENCY HAVING JURISDICTION.
  - 3.2. BEDDING: CONTRACTOR SHALL INSTALL PVC AND HDPE PIPING IN ACCORDANCE WITH CEAM, ASTM D 2321 AND ASTM F 1668 (FOR GRAVITY SEWER), ASTM D 2774 (FOR PRESSURE PIPE), ASTM A798 (FOR CMP), AND PROJECT DETAILS. CONTRACTOR SHALL INSTALL RC PIPE IN ACCORDANCE WITH CEAM, ASTM C 1479, AND PROJECT DETAILS AND SPECIFICATIONS.
- 4. CONTRACTOR SHALL PROVIDE 10 FEET MINIMUM HORIZONTAL SEPARATION (OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE/STRUCTURE) BETWEEN WATER LINES AND SANITARY OR STORM LINES AND STRUCTURES.
- 5. CONTRACTOR SHALL PROVIDE 24 INCH MINIMUM VERTICAL SEPARATION (OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE/STRUCTURE) BETWEEN WATER LINES AND OTHER UTILITY LINES. PROVIDE INSULATION WHERE WATER, SANITARY, OR STORM UTILITIES CROSS. OFFSET WATERMAIN AND SERVICES AS NECESSARY.
- 6. CONTRACTOR SHALL VERIFY PIPE SIZE, MATERIAL, AND ELEVATION FOR CONNECTIONS. PROVIDE APPROPRIATE PIPES AND FITTINGS REQUIRED TO MAKE CONNECTIONS TO EXISTING INFRASTRUCTURE AS VERIFIED IN THE FIELD.
- 7. CONTRACTOR SHALL PROVIDE AND INSTALL A FLEXIBLE COMPRESSION JOINT TO MAKE WATERTIGHT CONNECTIONS TO MANHOLES IN ACCORDANCE WITH MINNESOTA PLUMBING CODE, SECTION 719.6. RESILIENT RUBBER JOINTS MEETING ASTM C 923 MAY BE USED IF APPROVED BY AGENCY HAVING JURISDICTION SEE PROJECT DETAILS.
- 8. CONTRACTOR SHALL PLACE AND COMPACT FILL MATERIAL BEFORE INSTALLATION OF PROPOSED UTILITIES.
- 9. CONTRACTOR IS RESPONSIBLE FOR PROPERLY LOCATING AND INSTALLING CATCH BASINS SO THAT THE INLET FRAME AND GRATE PROPERLY ALIGN WITH CURB AND GUTTER.
- 10. LINES UNDERGROUND SHALL BE INSTALLED, INSPECTED, AND APPROVED PRIOR TO BACKFILLING IN ACCORDANCE WITH CITY OF CRYSTAL REQUIREMENTS.
- 11. ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES, AGENCY HAVING JURISDICTION AND UTILITY SERVICE COMPANIES.

DEWATERING NOTES

- 1. IN THE EVENT THAT GROUNDWATER DEWATERING IS NECESSARY CONTRACTOR SHALL OBTAIN APPLICABLE REQUIRED PERMITS (INCLUDING MN DNR WATER APPROPRIATION PERMIT) AND SUBMIT DEWATERING PLAN TO CITY FOR REVIEW. DEWATERING MUST MEET PERMIT REQUIREMENTS AND BE APPROVED BEFORE STARTING CONSTRUCTION ACTIVITIES.
- 2. CONTRACTOR MUST DEWATER IN ACCORDANCE WITH THE PROJECT SWPPP AND NPDES PERMIT.
- 3. CONTRACTOR MUST DISCHARGE TURBID OR SEDIMENT-LADEN WATER RELATED TO DEWATERING OR BASIN DRAINING (E.G. PUMPED DISCHARGES, TRENCH/DITCH CUTS FOR DRAINAGE) TO A TEMPORARY OR PERMANENT SEDIMENTATION BASIN ON THE PROJECT SITE UNLESS INFEASIBLE. CONTRACTOR MAY DISCHARGE FROM THE TEMPORARY OR PERMANENT SEDIMENTATION BASINS TO THE SURFACE WATERS IF THE BASIN WATER HAS BEEN VISUALLY CHECKED TO ENSURE ADEQUATE TREATMENT HAS BEEN OBTAINED IN THE BASIN AND THAT NUISANCE CONDITIONS (SEE MINNESOTA RULES CHAPTER 7050.0210, SUBPART 2) WILL NOT RESULT FROM THE DISCHARGE. IF THE WATER CANNOT BE DISCHARGED TO A SEDIMENTATION BASIN PRIOR TO ENTERING THE SURFACE WATER, IT MUST BE TREATED WITH THE APPROPRIATE BMPS (E.G. SILT BAGS), SUCH THAT THE DISCHARGE DOES NOT ADVERSELY AFFECT THE RECEIVING WATER OR DOWNSTREAM PROPERTIES. IF THE CONTRACTOR MUST DISCHARGE WATER THAT CONTAINS OIL OR GREASE, THE CONTRACTOR MUST USE AN OIL-WATER SEPARATOR OR SUITABLE FILTRATION DEVICE (E.G. CARTRIDGE FILTERS, ABSORBENTS PADS) PRIOR TO DISCHARGING THE WATER. THE CONTRACTOR MUST ENSURE THAT DISCHARGE POINTS ARE ADEQUATELY PROTECTED FROM EROSION AND SCOUR. THE DISCHARGE MUST BE DISPERSED OVER NATURAL ROCK RIPRAP, SAND BAGS, PLASTIC SHEETING, OR OTHER ACCEPTED ENERGY DISSIPATION MEASURES.
- 4. CONTRACTOR MUST DISCHARGE WATER FROM DEWATERING OR BASIN-DRAINING ACTIVITIES IN A MANNER THAT DOES NOT CAUSE NUISANCE CONDITIONS, EROSION IN RECEIVING CHANNELS OR ON DOWNSLOPE PROPERTIES, OR INUNDATION IN WETLANDS CAUSING SIGNIFICANT ADVERSE IMPACT TO THE WETLAND.
- 5. IF THE CONTRACTOR IS USING FILTERS WITH BACKWASH WATER, THE CONTRACTOR MUST HAUL THE BACKWASH WATER AWAY FOR DISPOSAL. RETURN THE BACKWASH WATER TO THE BEGINNING OF THE TREATMENT PROCESS, OR INCORPORATE THE BACKWASH WATER INTO THE SITE IN A MANNER THAT DOES NOT CAUSE EROSION. THE CONTRACTOR MAY DISCHARGE BACKWASH WATER TO THE SANITARY SEWER IF PERMISSION IS GRANTED BY THE SANITARY SEWER AUTHORITY. THE CONTRACTOR MUST REPLACE AND CLEAN THE FILTER MEDIA USED IN DEWATERING DEVICES WHEN REQUIRED TO RETAIN ADEQUATE FUNCTION.



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PHONE: 763-252-6800  
FAX: 952-831-1268  
WWW.WENCK.COM

CLIENT:



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KENTUCKY AVE WATER  
QUALITY IMPROVEMENT

CITY OF CRYSTAL  
HENNEPIN COUNTY, MINNESOTA

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CERTIFICATION:

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.



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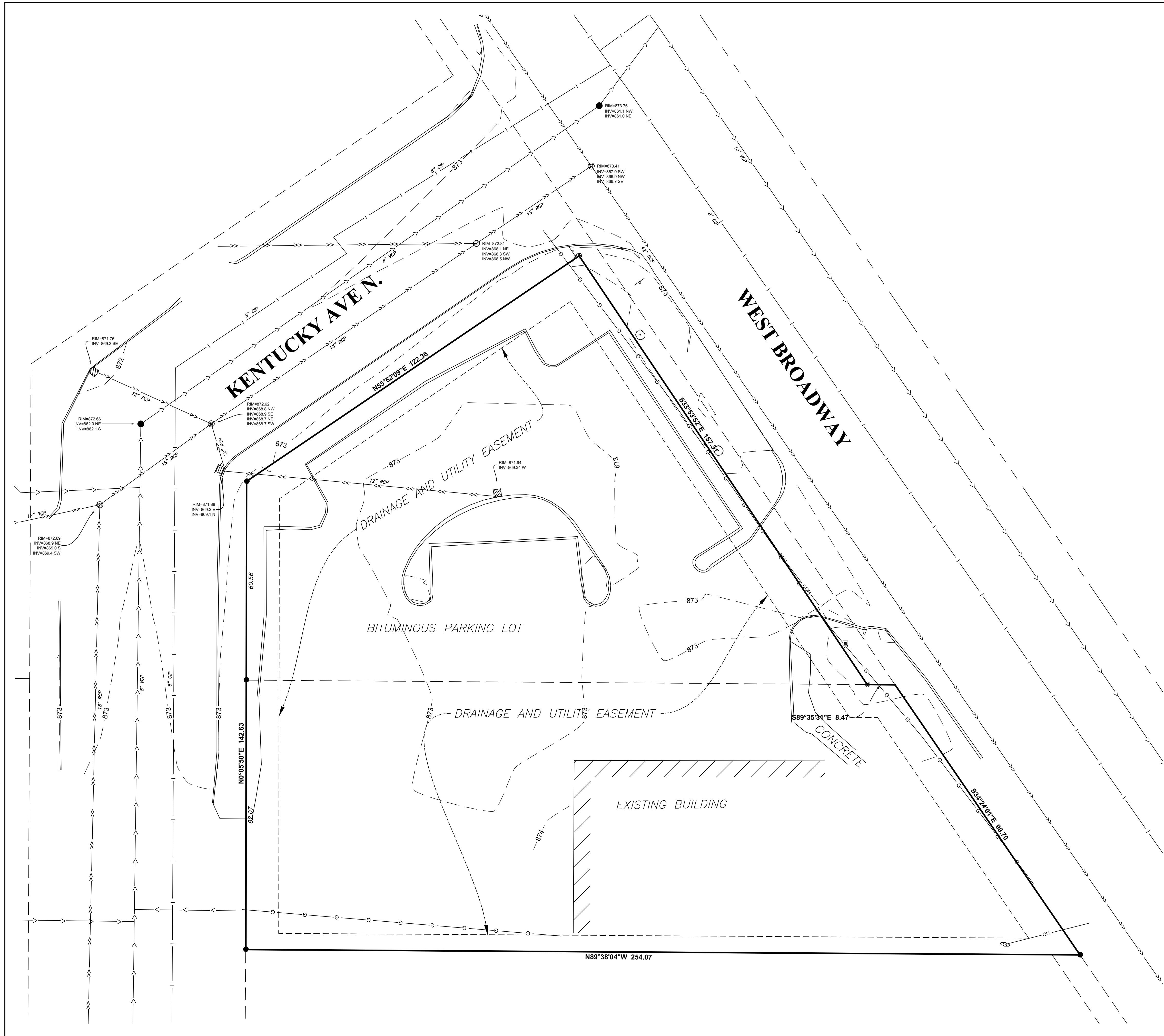
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SHEET TITLE:

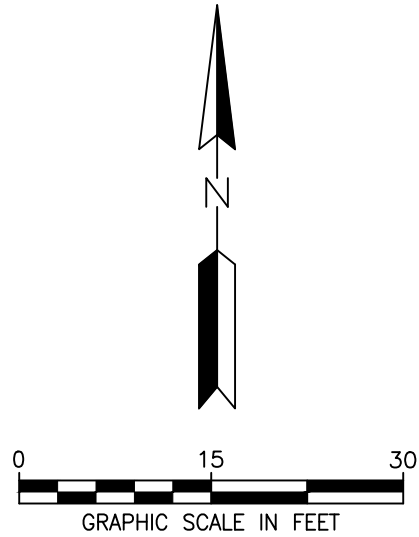
NOTES

SHEET NO.: C-002





	PROPERTY BOUNDARY
	RIGHT OF WAY LINE
	EXISTING EASEMENT LINE
	EXISTING PROPERTY LINE
	EXISTING STORM SEWER
	EXISTING SANITARY SEWER
	EXISTING WATERMAIN
	EXISTING CURB AND GUTTER
	EXISTING MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING BUILDING
	EXISTING SANITARY MANHOLE
	EXISTING STORM SEWER MANHOLE
	EXISTING STORM SEWER INLET
	EXISTING COMMUNICATIONS PEDESTAL
	EXISTING SIGN
	EXISTING DECIDUOUS TREE
	EXISTING UNDERGROUND GAS LINE
	EXISTING UNDERGROUND COMMUNICATION LINE
	EXISTING OVERHEAD UTILITY LINE



1. EXISTING CONDITIONS SHOWN ARE FROM A TOPOGRAPHIC SURVEY COMPLETED BY WENCK ASSOCIATES DATED FEBRUARY 10, 2020. EXISTING FEATURES MAY NOT BE EXACT TO THEIR LOCATION. CONTRACTOR RESPONSIBLE FOR VERIFYING THE CONDITIONS OF THE SITE AND MUST IMMEDIATELY NOTIFY THE ENGINEER OF DISCREPANCIES OR VARIATIONS FROM THE DRAWINGS.
2. SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF C/ASCE 38-2 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA". EXACT LOCATION/DEPTH OF SUBSURFACE UTILITIES SUCH AS GAS, TELEPHONE, FIBER OPTIC, SEWER, WATER, PIPELINES, ELECTRICAL, AND CABLE TV ARE UNKNOWN AND THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE.
3. CONTRACTOR RESPONSIBLE FOR CONTACTING GOPHER STATE ONE CALL (1-800-252-1166) A MINIMUM OF 48 HOURS IN ADVANCE (EXCLUDING HOLIDAYS AND WEEKENDS) BEFORE STARTING WORK FOR LOCATIONS OF UNDERGROUND UTILITIES.
4. QUANTITIES ARE APPROXIMATE, AND MAY VARY TO ALLOW COMPLETION OF WORK.
5. WORK AND MATERIALS MUST COMPLY WITH CITY, COUNTY, STATE, AND FEDERAL (INCLUDING OSHA) REGULATIONS AND CODES.
6. CONTRACTOR SHALL COORDINATE AND MAINTAIN STORMWATER DRAINAGE CONVEYANCE THROUGHOUT CONSTRUCTION (BOTH PIPED AND OVERLAND FLOW).
7. CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING PAVEMENT, SITE FEATURES, UTILITIES, TREES, ETC., UNLESS NOTED OR SHOWN OTHERWISE.
8. EXISTING PAVEMENT AND SITE CONDITIONS HAVE BEEN DOCUMENTED AND ANY DAMAGE TO THE EXISTING PAVEMENT, CURBING, STRIPING, OR OTHER SITE FEATURE TO REMAIN MUST BE REPLACED BY THE CONTRACTOR, TO OWNER'S SATISFACTION, AT NO ADDITIONAL COST TO THE OWNER.
9. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING CONSTRUCTION AND WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES.
10. CONTRACTOR MUST IMMEDIATELY NOTIFY THE OWNER AND ENGINEER OF DISCREPANCIES OR CONFLICTS IN THE CONSTRUCTION DOCUMENTS BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS ARE TO BE MADE WITHOUT PRIOR APPROVAL FROM THE OWNER AND ENGINEER. FAILURE TO NOTIFY OWNER AND ENGINEER OF AN IDENTIFIABLE CONFLICT BEFORE PROCEEDING WITH INSTALLATION RELIEVES OWNER OF ANY OBLIGATION TO PAY FOR A RELATED CHANGE ORDER.
11. CONTRACTOR SHALL HAVE ONE COPY OF EACH REQUIRED CONSTRUCTION PERMIT AND ONE COPY OF THE MOST CURRENT AND COMPLETE SET OF CONSTRUCTION DOCUMENTS (INCLUDING PLANS, SPECIFICATIONS, GEOTECHNICAL REPORT AND SPECIAL CONDITIONS AND PROVISIONS) AVAILABLE AT THE PROJECT SITE AT ALL TIMES.
12. CONTRACTOR SHALL PLAN FOR AND ENSURE PERSONNEL COMPLY WITH BASIC PROVISIONS OF OSHA SAFETY AND HEALTH STANDARDS (29 CFR 1910) AND GENERAL CONSTRUCTION STANDARDS (29 CFR 1926) AS APPROPRIATE.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH WORK. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS FOR SAFETY OF EMPLOYEES ON PROJECT SITE AND OTHER PERSONS AND ORGANIZATIONS WHO MAY BE AFFECTED BY THE PROJECT. CONTRACTOR'S DUTIES AND RESPONSIBILITIES FOR SAFETY IN CONNECTION WITH WORK SHALL CONTINUE UNTIL SUCH TIME AS ALL WORK IS COMPLETED, AND ENGINEER HAS ISSUED NOTICE TO CONTRACTOR THAT WORK IS COMPLETE.


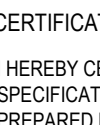
1. HORIZONTAL DATUM: HENNEPIN COUNTY COORDINATE SYSTEM NAD83(11)
2. VERTICAL DATUM: NAVD88
3. BENCHMARK: MNDOT CONTROL STATION GEP A ELEVATION=867.09'

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.

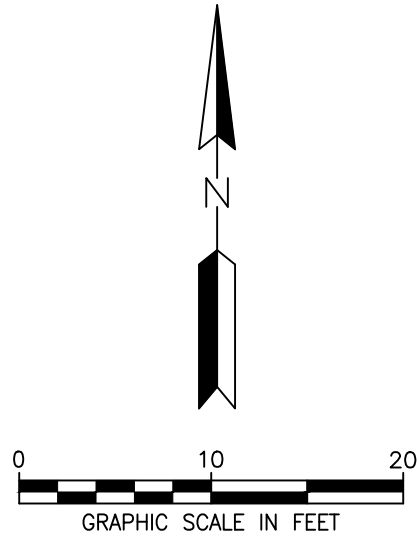
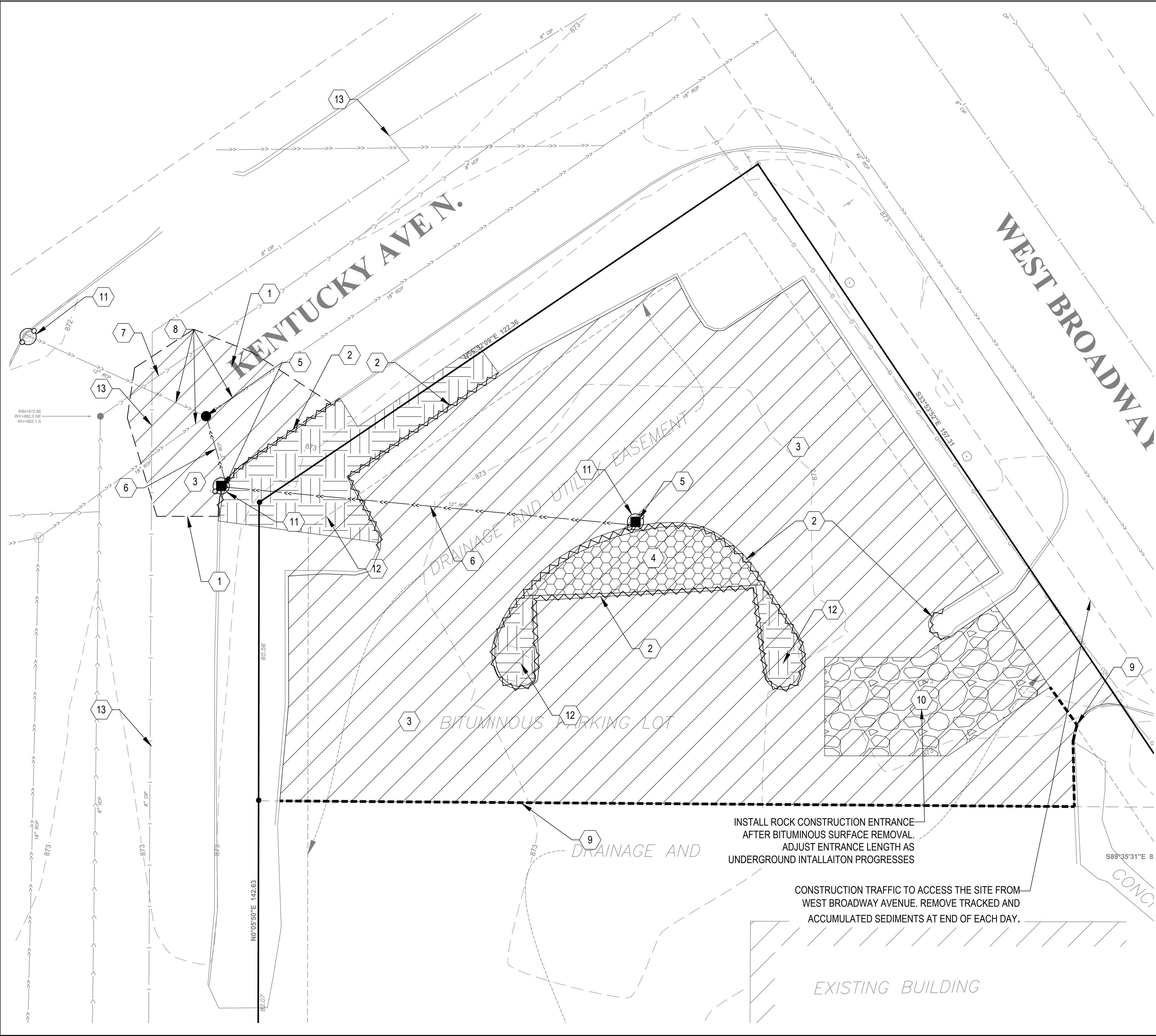
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## ALL BEFORE YOU DIG

TWIN CITY AREA: 651-454-0002  
TOLL FREE 1-800-252-1166

 <b style="font-size: 2em;">WENCK</b>  7500 OLSON MEMORIAL HWY SUITE 300 GOLDEN VALLEY, MN 55427 PHONE: 763-252-6800 FAX: 952-431-1268 WWW.WENCK.COM				
CLIENT:				
 <b>CITY OF CRYSTAL</b>  4141 DOUGLAS DRIVE NORTH CRYSTAL, MN 55422:				
<h1 style="margin: 0;">KENTUCKY AVE WATER QUALITY IMPROVEMENT</h1> <p style="margin-top: 20px;"><b>CITY OF CRYSTAL HENNEPIN COUNTY, MINNESOTA</b></p>				
PROJECT TITLE:				
ISSUE NO.:      0				
DESCRIPTION: BID PLANS				
DATE: 04/15/2020				
CERTIFICATION:				
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.				
				
LICENSE NO. :    25817				
DATE:             04/15/2020				
PROJECT NO. :        1886-0010				
DWN BY: BMB		CHK'D BY: MJS		APP'D BY: BFK
ISSUE DATE:                  04/15/2020				
ISSUE NO. :                        0				
SHEET TITLE:				
<b>EXISTING CONDITIONS</b>				
SHEET NO. :				
<b>C-003</b>				





LEGEND

- PROPERTY BOUNDARY
- 901 EXISTING MINOR CONTOUR
- 900 EXISTING MAJOR CONTOUR
- EXISTING EASEMENT LINE
- EXISTING PROPERTY LINE
- REMOVE STORM SEWER
- REMOVE BITUMINOUS PAVEMENT
- SALVAGE ROCK AND REMOVE PARKING LOT ISLAND
- CLEAR AND GRUB AREA
- ROCK CONSTRUCTION ENTRANCE
- REMOVE CURB AND GUTTER
- SAWCUT PAVEMENT
- REMOVE STORM SEWER MANHOLE
- REMOVE STORM SEWER INLET
- EXISTING STORM SEWER MANHOLE
- EXISTING STORM SEWER INLET
- EXISTING STORM SEWER
- BIOROLL

GENERAL NOTES

- CONTRACTOR SHALL CONSTRUCT BARRIERS OR CONSTRUCTION FENCE SURROUNDING ALL WORK AREAS.
- CONTRACTOR SHALL STOCKPILE MATERIALS FOR LATER USE AS NEEDED AT A DESIGNATED AREA APPROVED BY THE ENGINEER. PROTECT STOCKPILES WITH PERIMETER CONTROL WHEN NOT IN USE.
- INSTALL CONSTRUCTION FENCE AROUND ALL ACTIVE WORK AREAS. MAINTAIN FENCE AND MOVE AS NEEDED THROUGHOUT THE WORK.
- PROTECT CURB WHERE NOT CALLED OUT FOR REMOVAL.
- OFF-SITE TRANSPORTATION AND DISPOSAL ARE INCLUDED WITH REMOVAL BID ITEMS.
- BACKFILL EXCAVATIONS IN THE RIGHT OF WAY AT THE END OF EACH WORK DAY.

KEYNOTES

- 1. SAWCUT BITUMINOUS PAVEMENT (TYP.)
- 2. REMOVE CURB AND GUTTER (TYP.)
- 3. REMOVE BITUMINOUS PAVEMENT (TYP.)
- 4. SALVAGE ROCK TO REPLACE IN SAME LOCATION AND REMOVE PARKING LOT ISLAND
- 5. REMOVE STORM SEWER STRUCTURE
- 6. REMOVE STORM SEWER PIPE
- 7. PROTECT EXISTING SANITARY STRUCTURE AND PIPE
- 8. PROTECT EXISTING STORM STRUCTURE AND PIPES
- 9. BIOLOG
- 10. ROCK CONSTRUCTION ENTRANCE
- 11. INLET PROTECTION
- 12. CLEAR AND GRUB AREA (TYP.). SALVAGE AND STOCKPILE EXISTING TOPSOIL.
- 13. EXISTING 8" WATERMAIN IN THIS AREA NOT SURVEYED AND SHOWN FOR REFERENCE ONLY - CONTRACTOR TO FIELD VERIFY LOCATION AND ADJUST REMOVAL AND REPLACEMENT LIMITS IF REQUIRED. COORDINATE WITH ENGINEER.

WARNING:

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CALL BEFORE YOU DIG

GOPHER STATE ONE CALL

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PHONE: 763-252-6800  
FAX: 952-831-1268  
WWW.WENCK.COM

CLIENT:



4141 DOUGLAS DRIVE NORTH  
CRYSTAL, MN 55422

KENTUCKY AVE WATER  
QUALITY IMPROVEMENT

CITY OF CRYSTAL  
HENNEPIN COUNTY, MINNESOTA

PROJECT TITLE:

ISSUE NO.:

0

DESCRIPTION:

BID PLANS

DATE:

04/15/2020

CERTIFICATION:

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*[Signature]*

LICENSE NO.: 25817

DATE: 04/15/2020

PROJECT NO.: 1886-0010

DWN BY: BMB CHK'D BY: MJS APP'D BY: BFK

ISSUE DATE: 04/15/2020

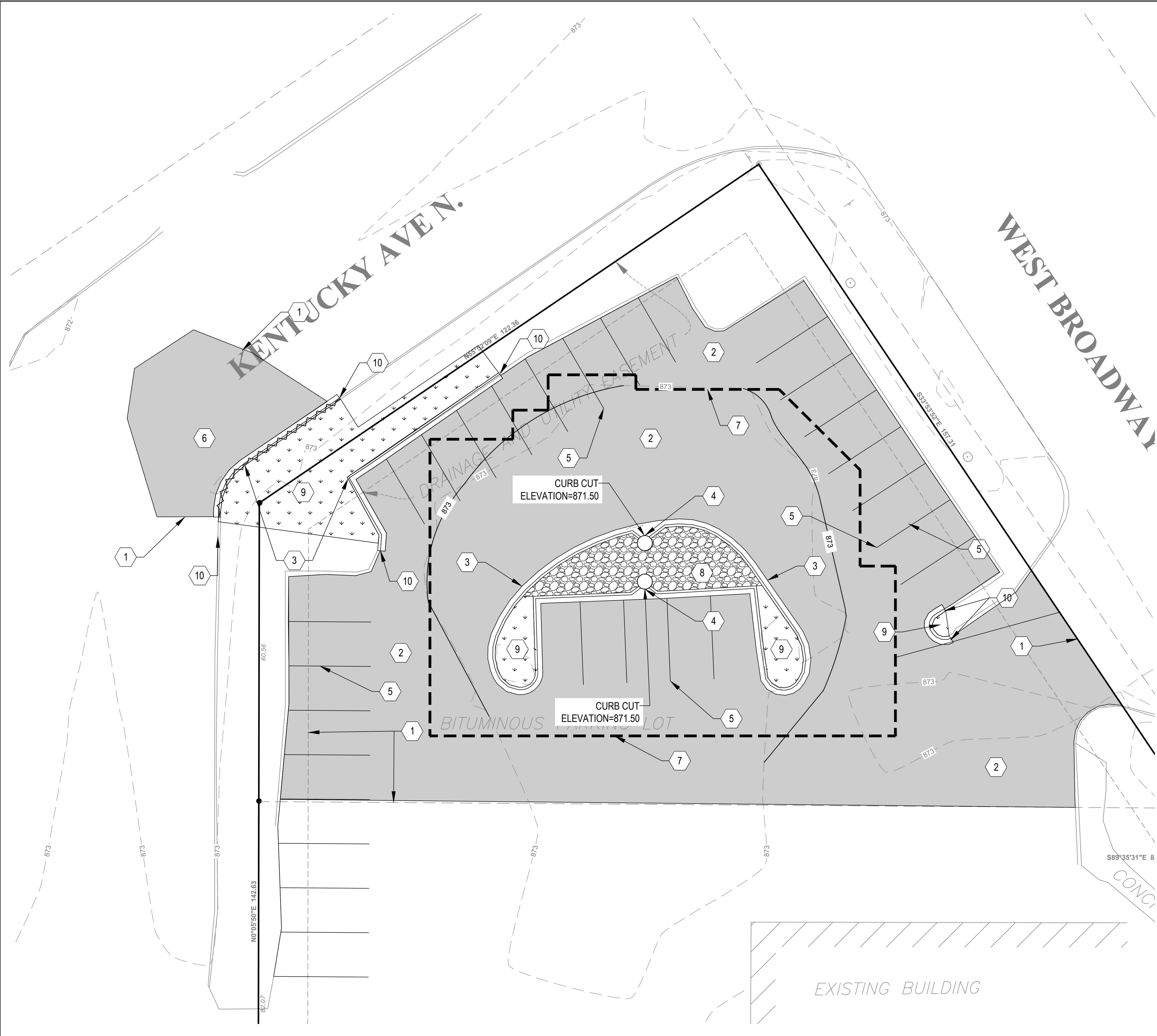
ISSUE NO.: 0

SHEET TITLE:  
REMOVALS PLAN AND  
PRECONSTRUCTION  
EROSION CONTROL PLAN

SHEET NO.:

C-004





**LEGEND**

—	PROPERTY BOUNDARY
— 901 —	PROPOSED MINOR CONTOUR
— 900 —	PROPOSED MAJOR CONTOUR
- - - 901 - - -	EXISTING MINOR CONTOUR
- - - 900 - - -	EXISTING MAJOR CONTOUR
- - - - -	EXISTING EASEMENT LINE
- - - - -	EXISTING PROPERTY LINE
=====	EXISTING CURB AND GUTTER
=====	CURB AND GUTTER
=====	BITUMINOUS PAVEMENT
=====	SALVAGED ROCK
=====	TURF ESTABLISHMENT
[---]	UNDERGROUND INFILTRATION SYSTEM FOOTPRINT
[---]	CURB AND GUTTER W/ RAIN GUARDIAN TURRET

**NOTES**

1. SEE SHEET C-002 FOR OTHER CONSTRUCTION NOTES.

- KEYNOTES** #
1. SAWCUT AND MATCH EXISTING BITUMINOUS ELEVATIONS (TYP.)
  2. BITUMINOUS PAVEMENT PARKING LOT. SEE BITUMINOUS PAVING - PARKING LOT SECTION ON SHEET C-801.
  3. B612 CURB AND GUTTER. SEE DETAIL.
  4. B612 CURB AND GUTTER WITH RAIN GUARDIAN TURRET. SEE DETAIL.
  5. LATEX PAINT PARKING STRIPE (TYP.)
  6. BITUMINOUS PATCHING. SEE BITUMINOUS PATCHING - PUBLIC STREET SECTION ON SHEET C-801.
  7. UNDERGROUND INFILTRATION SYSTEM FOOTPRINT
  8. SURFACE INFILTRATION BASIN
  9. SALT-TOLERANT SOD
  10. MATCH EXISTING CURB (TYP.)

**WARNING:**  
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CLIENT:

**CITY OF CRYSTAL**  
4141 DOUGLAS DRIVE NORTH  
CRYSTAL, MN 55422

**KENTUCKY AVE WATER  
QUALITY IMPROVEMENT**

CITY OF CRYSTAL  
HENNEPIN COUNTY, MINNESOTA

PROJECT TITLE:

ISSUE NO.:	0
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*[Signature]*

LICENSE NO.: 25817  
DATE: 04/15/2020

PROJECT NO.: 1886-0010

DWN BY:	CHKD BY:	APPD BY:
BMB	MJS	BFK

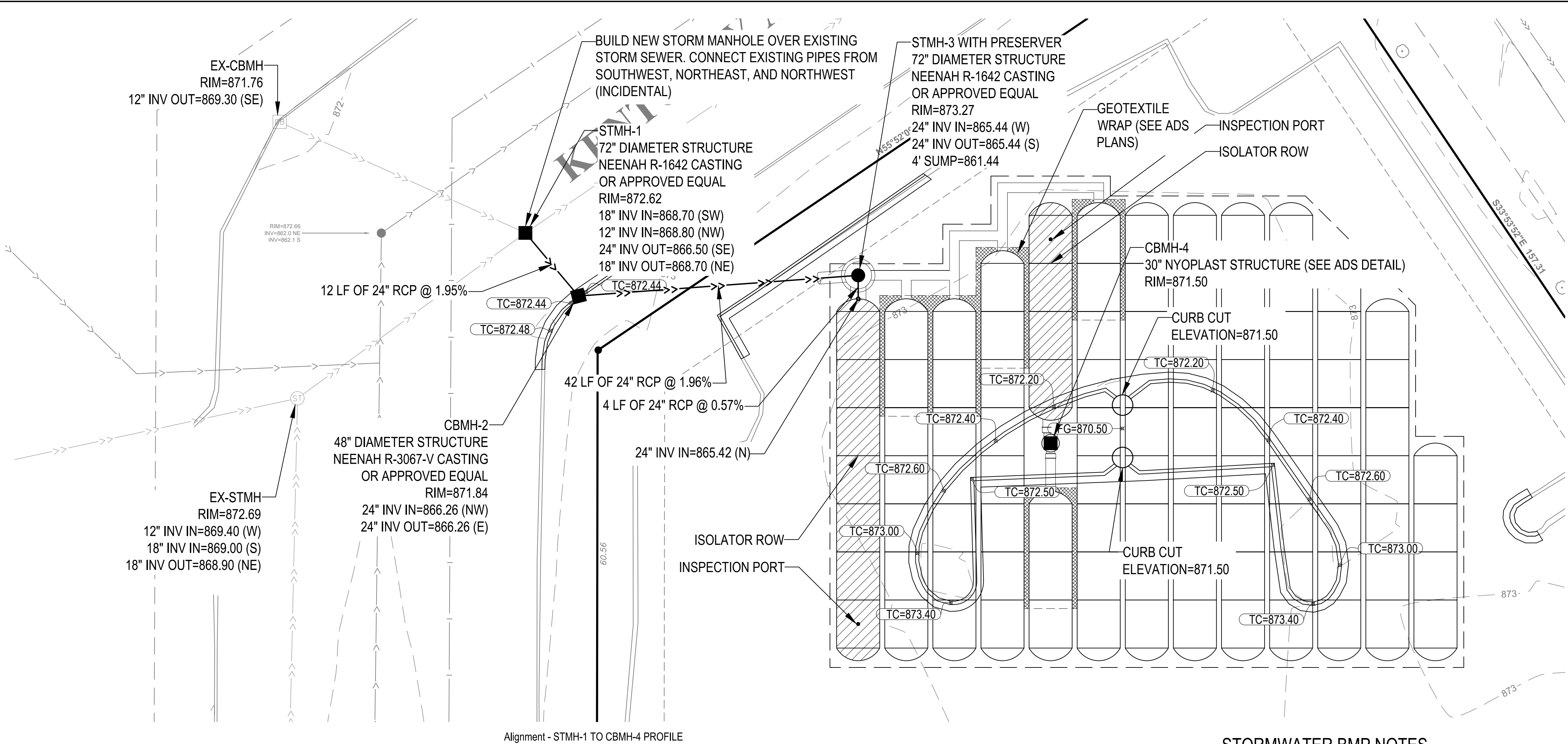
ISSUE DATE: 04/15/2020

ISSUE NO.: 0

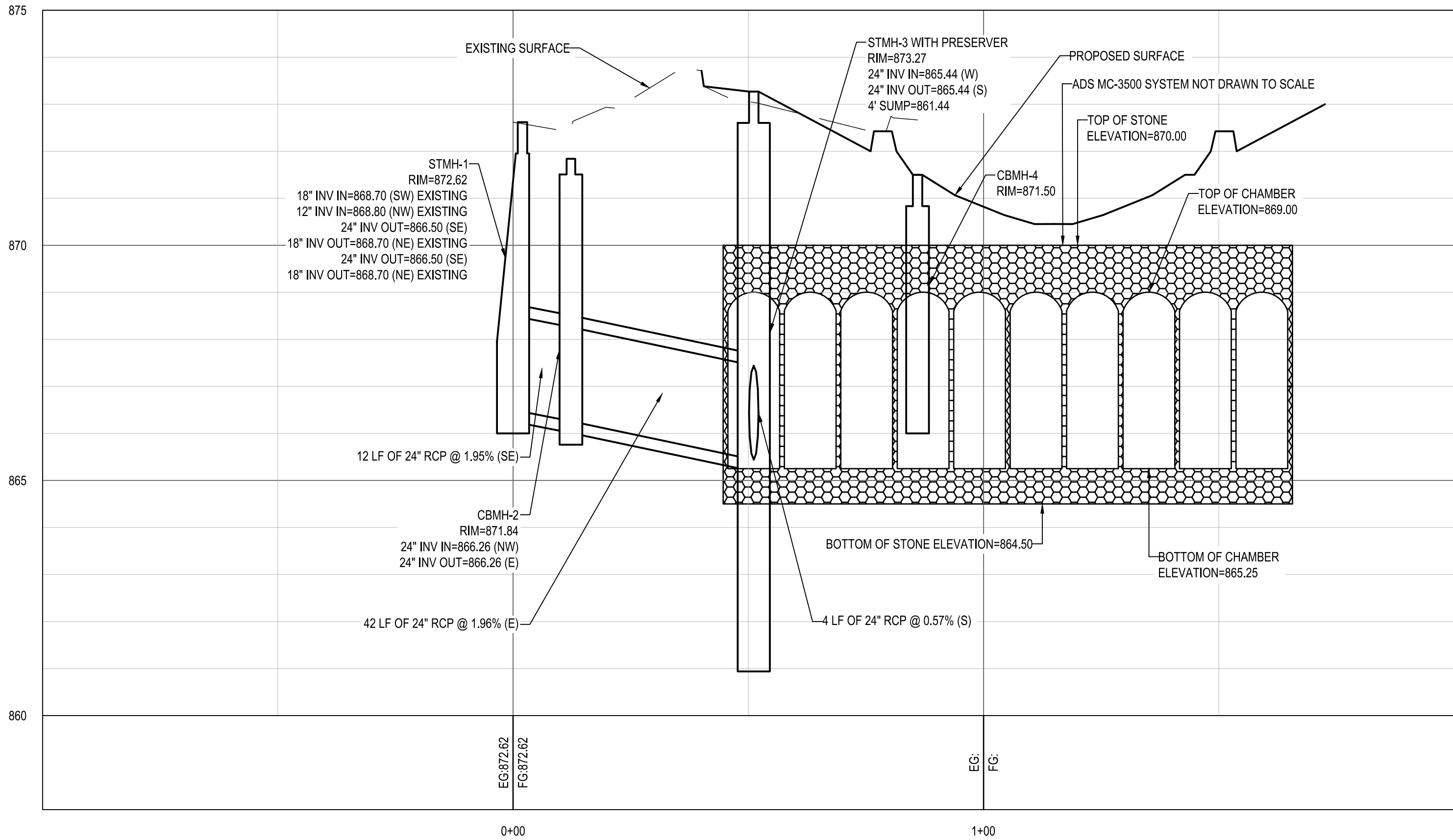
SHEET TITLE: **SITE PLAN**

SHEET NO.: **C-101**





Alignment - STMH-1 TO CBMH-4 PROFILE



## STORMWATER BMP NOTES

- UNDERGROUND INFILTRATION SYSTEM DESIGN IS BASED ON ADS STORMTECH MC-3500 CHAMBERS WITH A PRETREATMENT STRUCTURE. SEE ADS DETAILS APPENDED TO THESE PLANS.
- EMBEDMENT STONE SHALL BE CLEAN, DOUBLE WASHED, CRUSHED, ANGULAR AGGREGATE BETWEEN 1.5 AND 3"
- EMBEDMENT STONE SHALL BE A DURABLE ROCK TYPES ARE IGNEOUS AND CRYSTALLINE METAMORPHIC MINERALS INCLUDING BUT NOT LIMITED TO GRANITE, RHYOLITE, GABBRO, BASALT AND QUARTZITE.
- UNACCEPTABLE MINERALS FOR EMBEDMENT STONE INCLUDE, BUT ARE NOT LIMITED TO, CARBONATES AND NON-CRYSTALLINE MINERALS INCLUDING BUT NOT LIMITED TO LIMESTONE, DOLOMITE, DOLOSTONE AND SHALE
- CONTRACTORS MAY PROPOSE AN EQUAL UNDERGROUND SYSTEM MEETING THE FOLLOWING REQUIREMENTS:
  - NO METAL STRUCTURES SHALL BE ALLOWED
  - PROVIDE A MINIMUM OF 20,262 CUBIC FEET OF STORAGE
  - PROVIDE A MINIMUM OF 17,000 CUBIC FEET OF STORAGE BELOW THE SYSTEM OUTLET
  - MINIMUM BOTTOM ELEVATION OF THE SYSTEM SHALL BE 864.5
  - SYSTEM OUTLET ELEVATION SHALL BE 868.7
  - TOP OF SYSTEM SHALL NOT BE GREATER THAN 870.0
  - ANY ADDITIONAL REMOVALS OR RESTORATION REQUIRED FOR EQUAL ITEM SHALL BE INCLUDED IN THE LUMP SUM COST AS IDENTIFIED ON THE BID FORM.
- CONTRACTOR SHALL STAGE CONSTRUCTION APPROPRIATELY TO MINIMIZE COMPACTION OF THE SOILS IN THE INFILTRATION AREAS. CONTRACTOR SHALL ACHIEVE FINAL GRADING OF THE INFILTRATION AREA USING LOW IMPACT (TRACKED) EARTH MOVING EQUIPMENT TO MINIMIZE COMPACTION.
- CONTRACTOR SHALL STAKE OUT AND MARK THE PROJECT AREA TO KEEP CONSTRUCTION TRAFFIC, EQUIPMENT (EXCEPT THAT EQUIPMENT REQUIRED FOR GRADING AND CONSTRUCTION) AND MATERIAL STOCKPILES OUT OF THE PROPOSED INFILTRATION AREAS.
- CONTRACTOR SHALL STAGE CONSTRUCTION APPROPRIATELY, AND INSTALL NECESSARY EROSION AND SEDIMENT CONTROLS, TO PREVENT SEDIMENT AND TOPSOIL FROM WASHING INTO THE INFILTRATION BASIN. IN THE EVENT THAT SEDIMENT IS INTRODUCED TO THE BASIN, THE CONTRACTOR SHALL REMOVE THE MATERIAL BEFORE PROCEEDING WITH CONSTRUCTION, AT NO COST TO THE OWNER.
- CONTRACTOR SHALL NOT USE THE INFILTRATION BMP AS A TEMPORARY SEDIMENT BASIN.
- CONTRACTOR SHALL KEEP THE INFILTRATION BMP OFF-LINE BY RESTRICTING SURFACE WATER INFLOW UNTIL DIRECTED BY THE ENGINEER.

## GENERAL NOTES

- MANHOLES AND CATCH BASINS:
  - ALL CONNECTIONS SHALL BE WATERTIGHT.
  - FIELD VERIFY PIPE SIZES, LOCATIONS AND INVERTS.
  - CONNECT TO EXISTING PIPE AT REMOVAL LOCATION PER MANUFACTURER REQUIREMENTS
  - PROVIDE STRUCTURAL POLLUTION CONTROL DEVICE (PRESERVER OR EQUIVALENT) IN MANHOLE STMH-3. STRUCTURE DIAMETERS, INVERTS AND CASTINGS AS SHOWN IN THE PLANS.
- SOILS:
  - CONTRACTOR SHALL NOTE THAT SOIL IN THE EXCAVATION IS SUITABLE FOR ON-SITE OR OFF-SITE RE-USE. AN ENVIRONMENTAL PROFESSIONAL WILL BE ON SITE DURING EXCAVATION TO FIELD SCREEN TO ENSURE IT IS NOT IMPACTED BY A PAST RELEASE OR OTHERWISE REGULATED DUE TO THE PRESENCE OF DEMOLITION DEBRIS, ETC. CONTRACTOR SHALL STOCKPILE AND REUSE EXCAVATED SOIL ON SITE WHERE OTHER CONSTRUCTION MATERIALS ARE NOT SPECIFIED.
- BEDDING:
  - PROVIDE BEDDING MATERIAL FOR ALL BURIED PIPING, STRUCTURES AND UNDERGROUND INFILTRATION SYSTEM PER PROJECT DETAILS AND SPECIFICATIONS.

## WARNING:

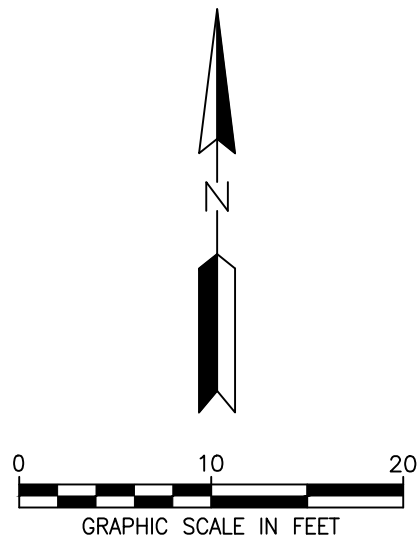
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CALL BEFORE YOU DIG

## GOPHER STATE ONE CALL

TWIN CITY AREA: 651-454-0002  
TOLL FREE 1-800-252-1166



## LEGEND

	PROPERTY BOUNDARY
	RIGHT OF WAY LINE
	EXISTING EASEMENT LINE
	EXISTING PROPERTY LINE
	EXISTING MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING STORM SEWER
	EXISTING SANITARY SEWER
	EXISTING WATERMAIN
	EXISTING SANITARY MANHOLE
	EXISTING CLEANOUT
	EXISTING STORM SEWER MANHOLE
	EXISTING STORM SEWER INLET
	STORM SEWER
	STORM MANHOLE
	STORM CATCH BASIN
	CURB AND GUTTER
	UNDERGROUND INFILTRATION SYSTEM FOOTPRINT
	CURB AND GUTTER W/ RAIN GUARDIAN TURRET
	ADS MC-3500 CHAMBER W/ END CAPS
	FINISHED GRADE ELEVATION
	TOP OF CURB ELEVATION



7500 OLSON MEMORIAL HWY  
SUITE 300  
GOLDEN VALLEY, MN 55427  
PHONE: 763-252-6800  
FAX: 952-831-1268  
WWW.WENCK.COM

CLIENT:



4141 DOUGLAS DRIVE NORTH  
CRYSTAL, MN 55422

# KENTUCKY AVE WATER QUALITY IMPROVEMENT

CITY OF CRYSTAL  
HENNEPIN COUNTY, MINNESOTA

PROJECT TITLE:

ISSUE NO.:

0

DESCRIPTION:

BID PLANS

DATE:

04/15/2020

CERTIFICATION:

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.

LICENSE NO.: 25817

DATE: 04/15/2020

PROJECT NO.: 1886-0010

DWN BY: BMB CHKD BY: MJS APPD BY: BFK

ISSUE DATE: 04/15/2020

ISSUE NO.: 0

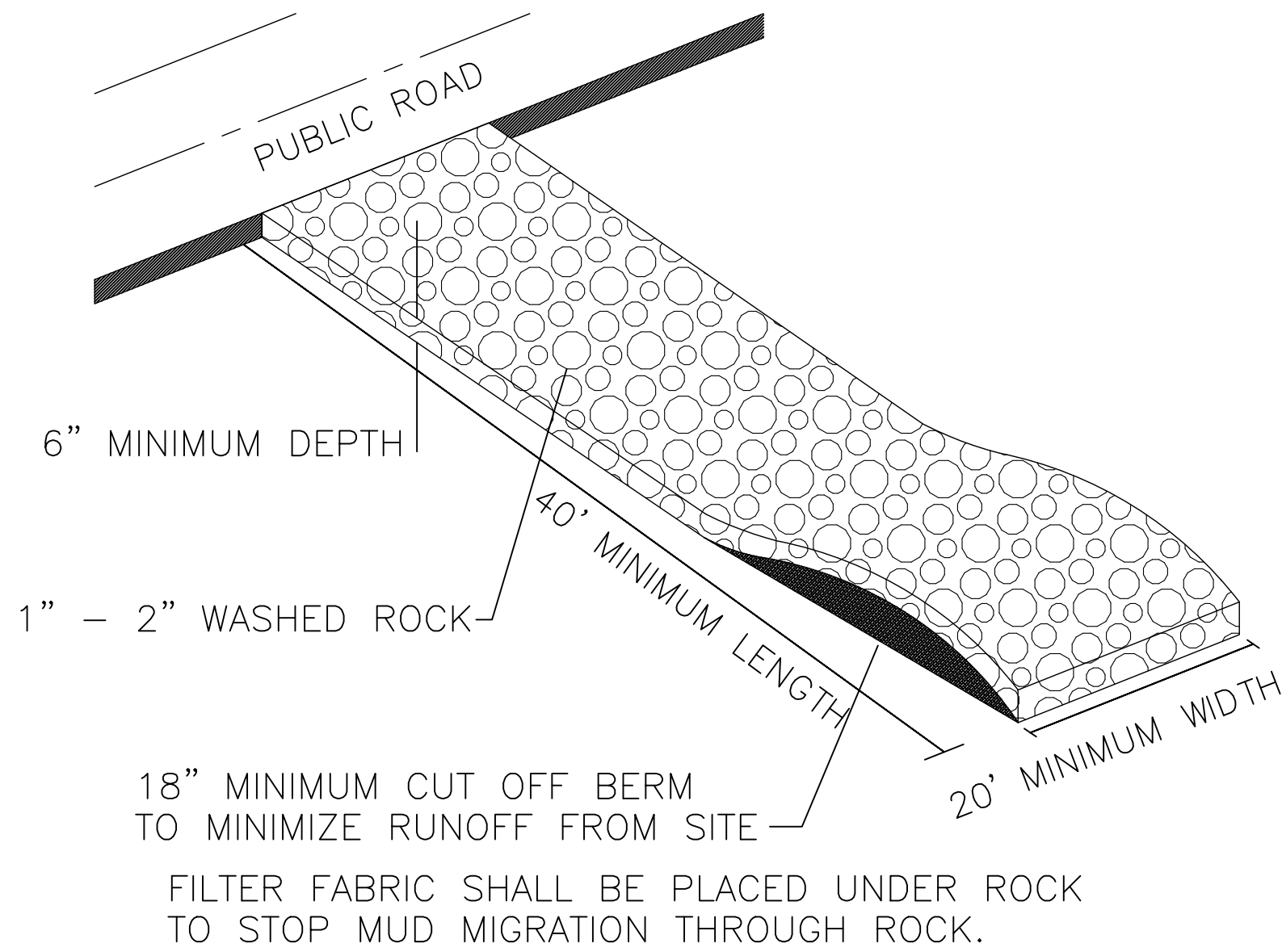
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STORM SEWER PLAN

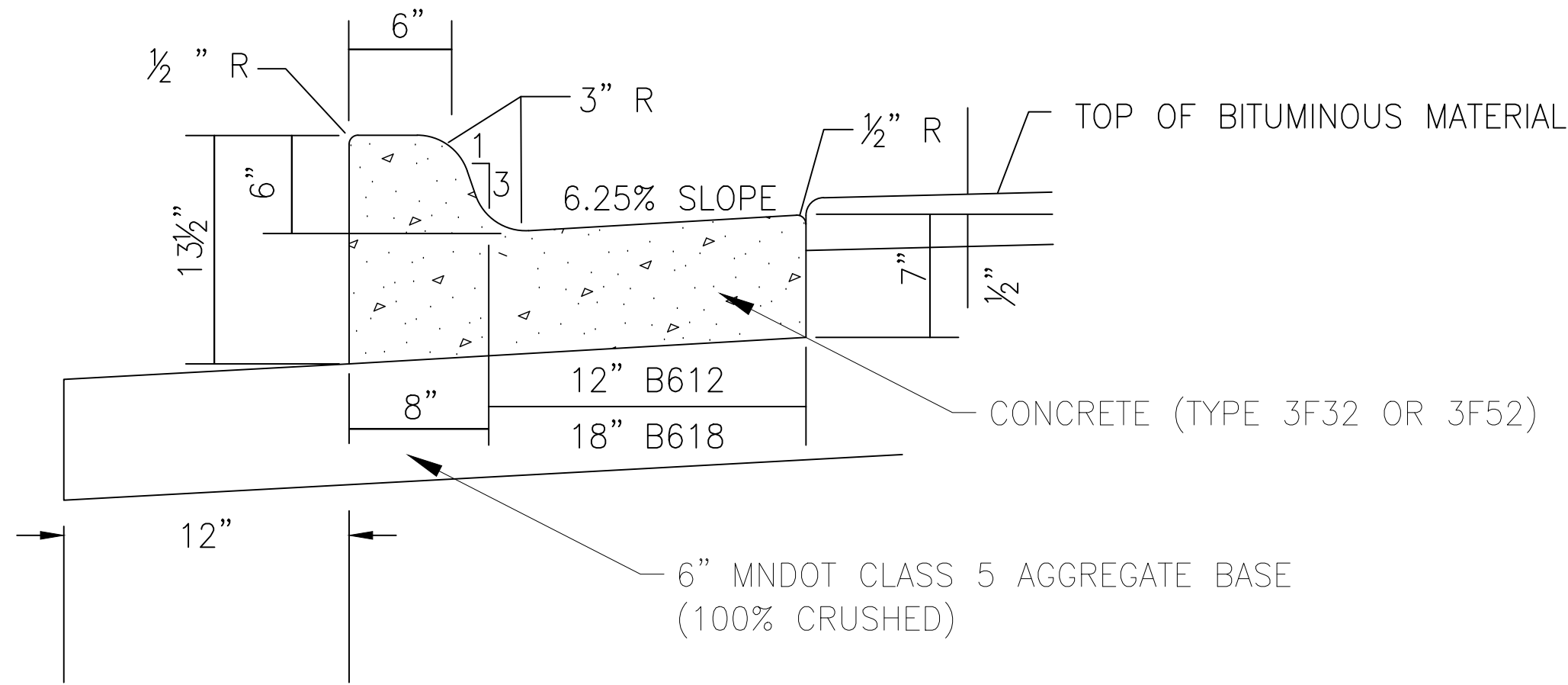
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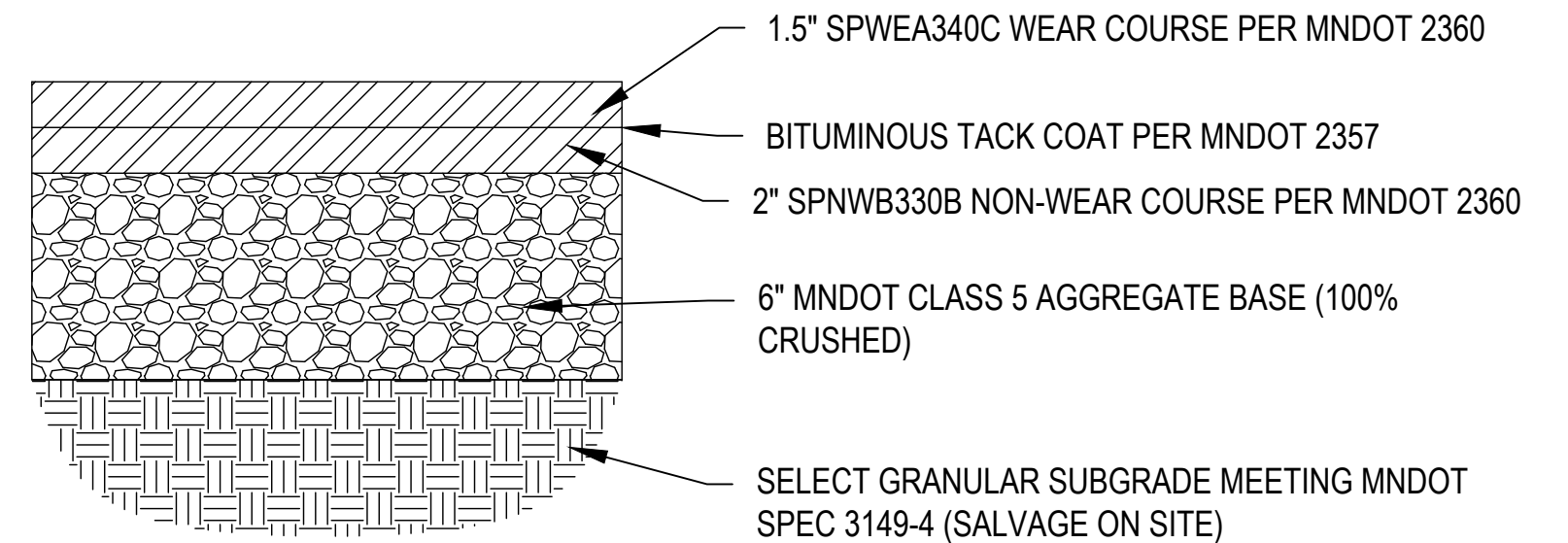




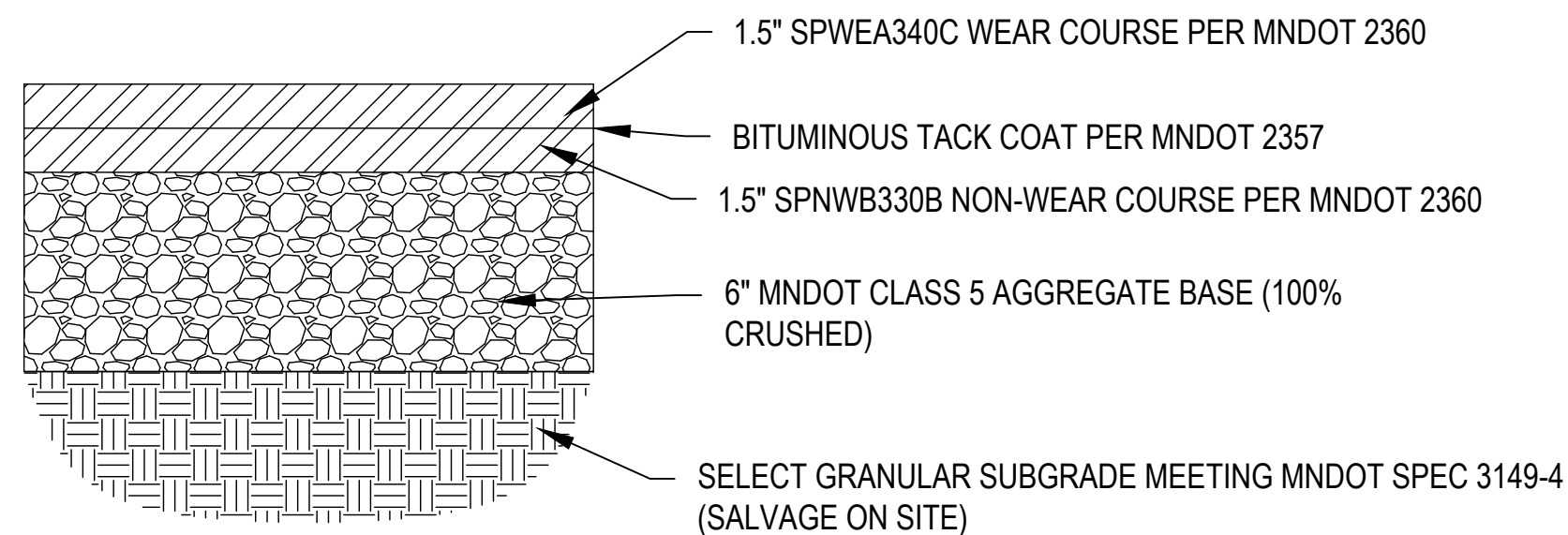
1 ROCK CONSTRUCTION ENTRANCE  
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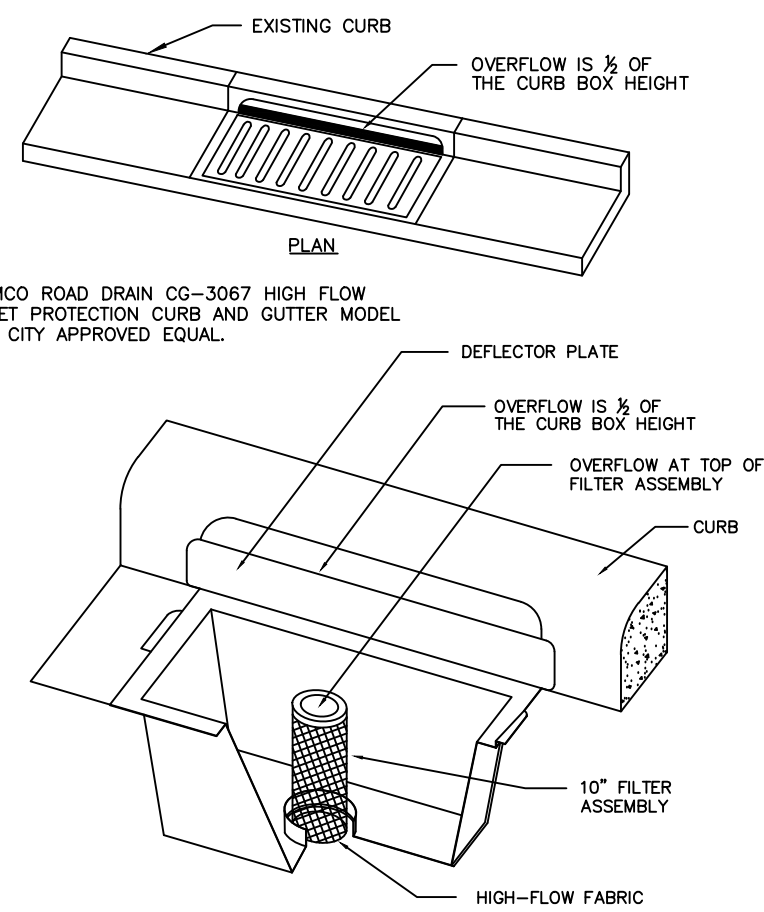
2 B612 CURB AND GUTTER  
C801 NOT TO SCALE



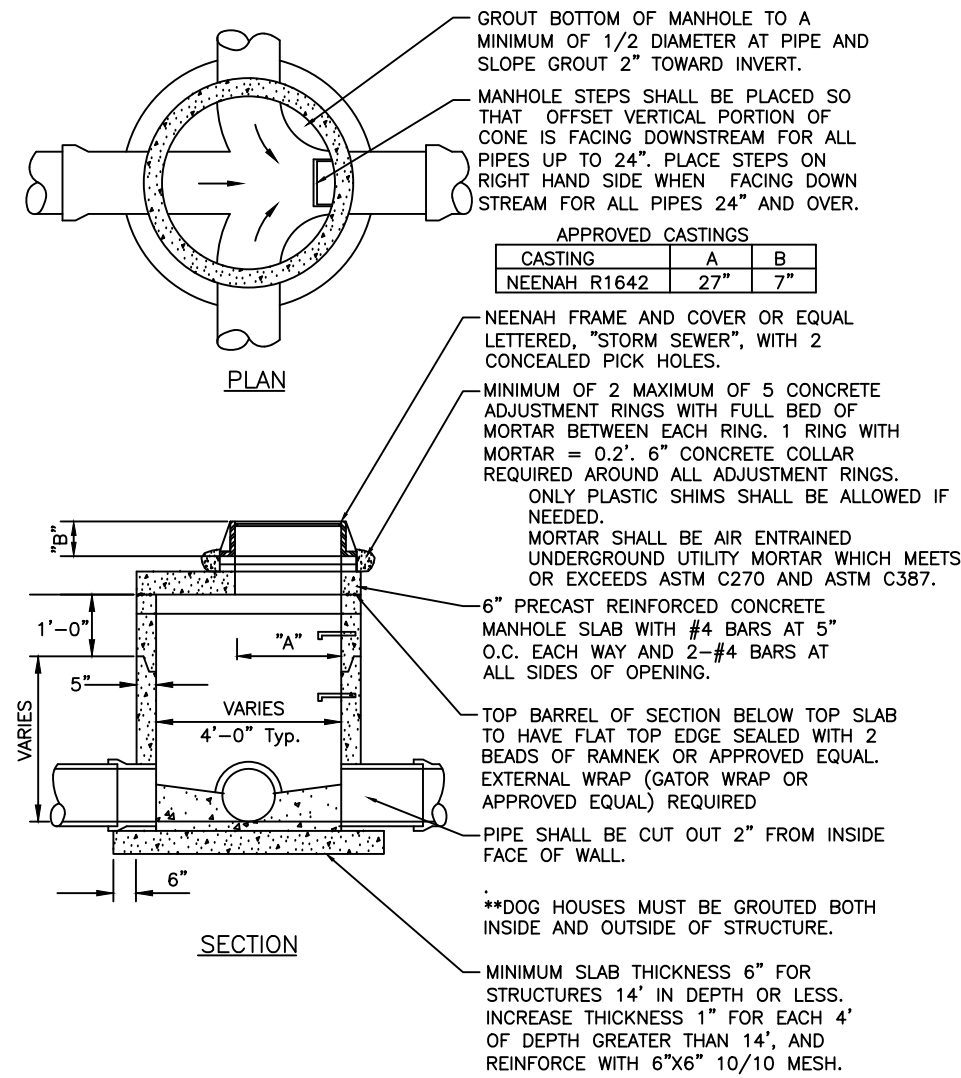
3 BITUMINOUS PATCHING - PUBLIC STREET  
C801 NOT TO SCALE



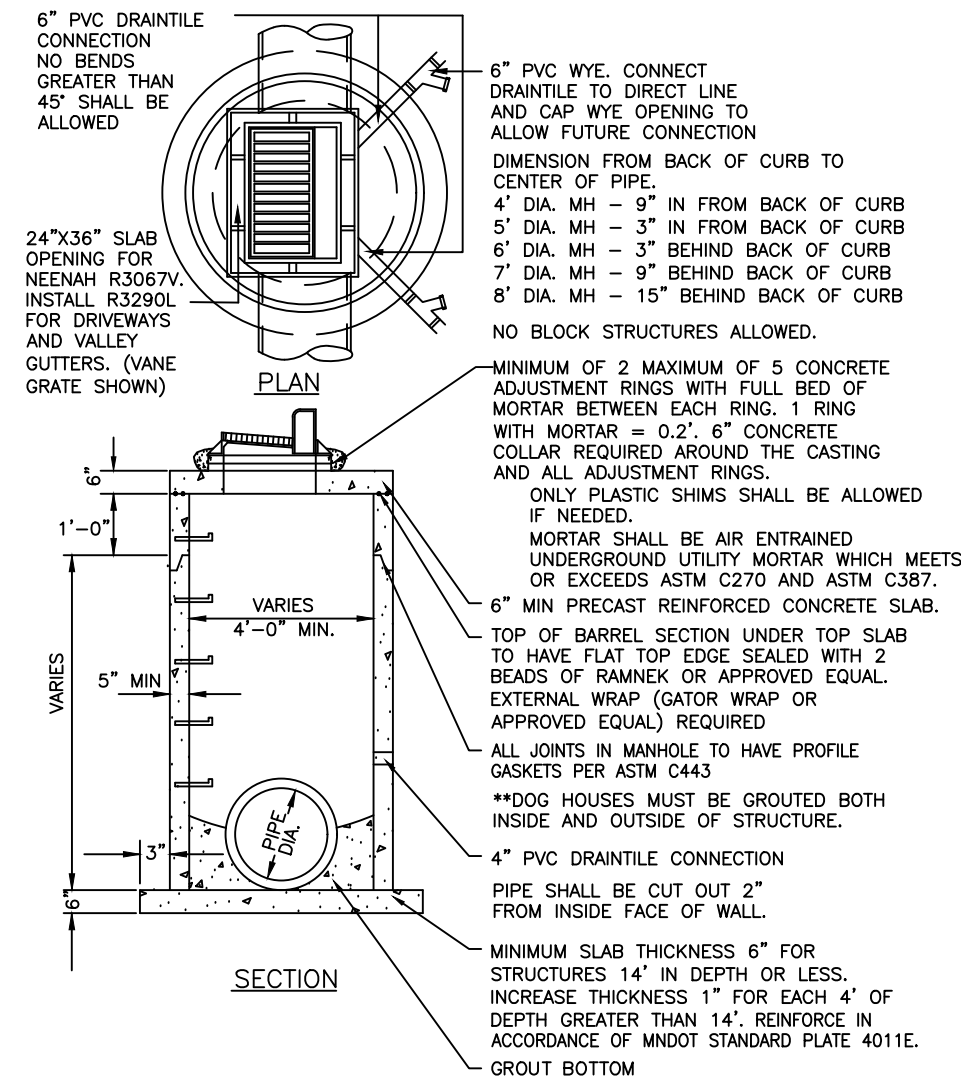
4 BITUMINOUS PAVEMENT - PARKING LOT  
C801 NOT TO SCALE



5 INLET PROTECTION  
C801 NOT TO SCALE



6 STORM SEWER MANHOLE  
C801 NOT TO SCALE



7 CATCH BASIN MANHOLE  
C801 NOT TO SCALE

PROJECT TITLE:	KENTUCKY AVE WATER QUALITY IMPROVEMENT									
ISSUE NO.:	0									
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*Mark K.*

LICENSE NO.: 25817

DATE: 04/15/2020

PROJECT NO.: 1886-0010

DWN BY: BMB CHK'D BY: MUS APP'D BY: BFK

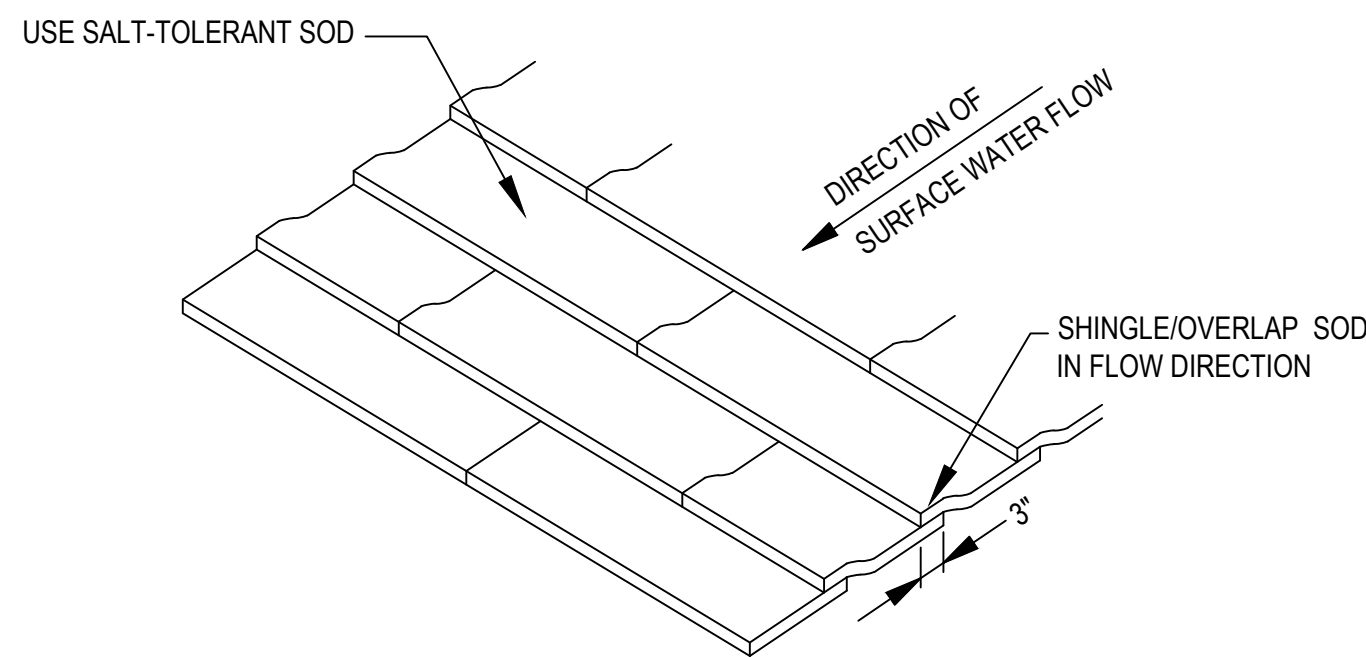
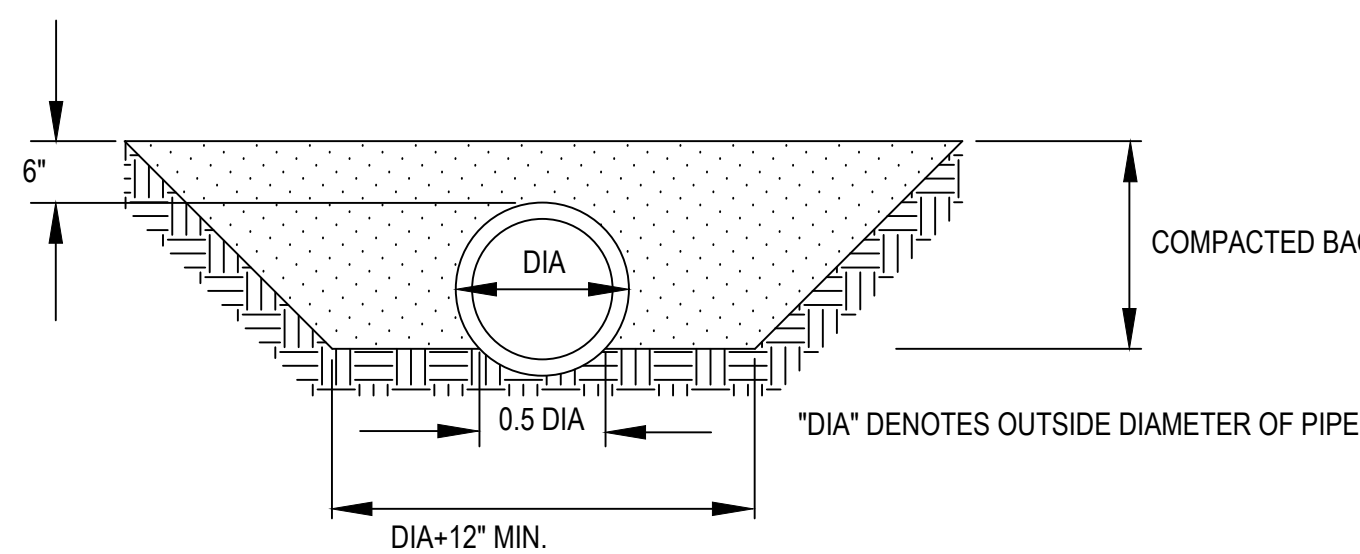
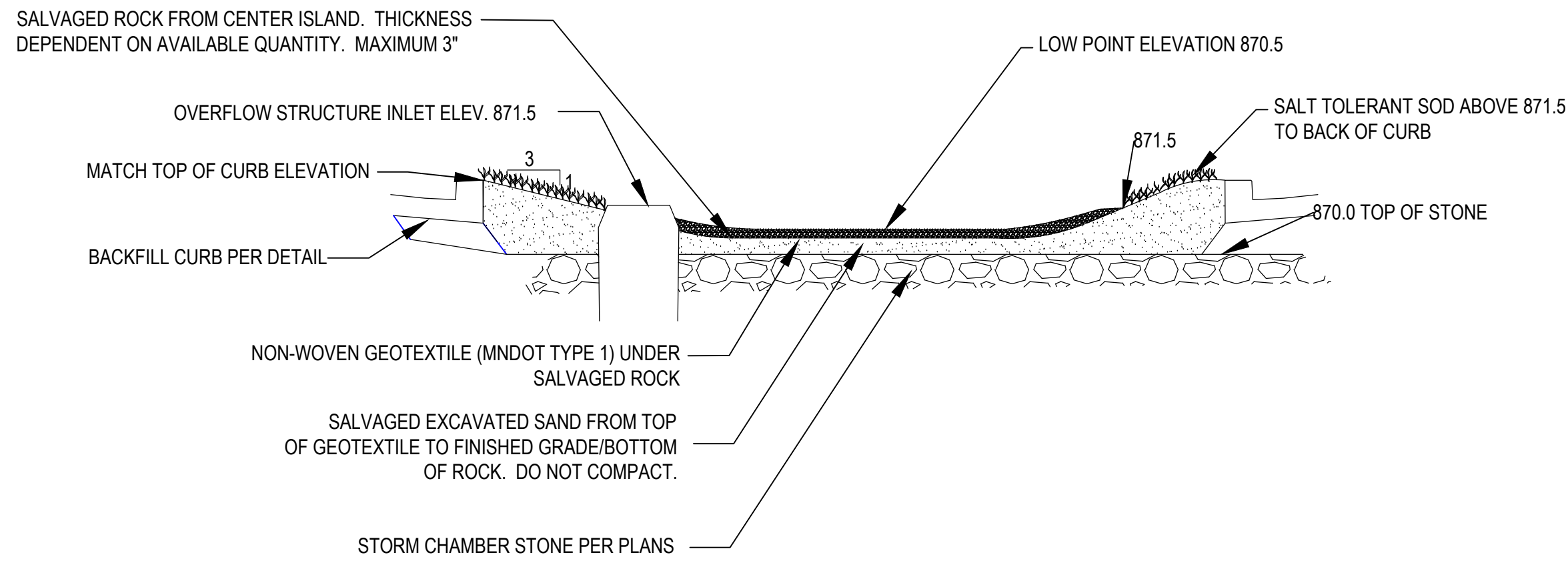
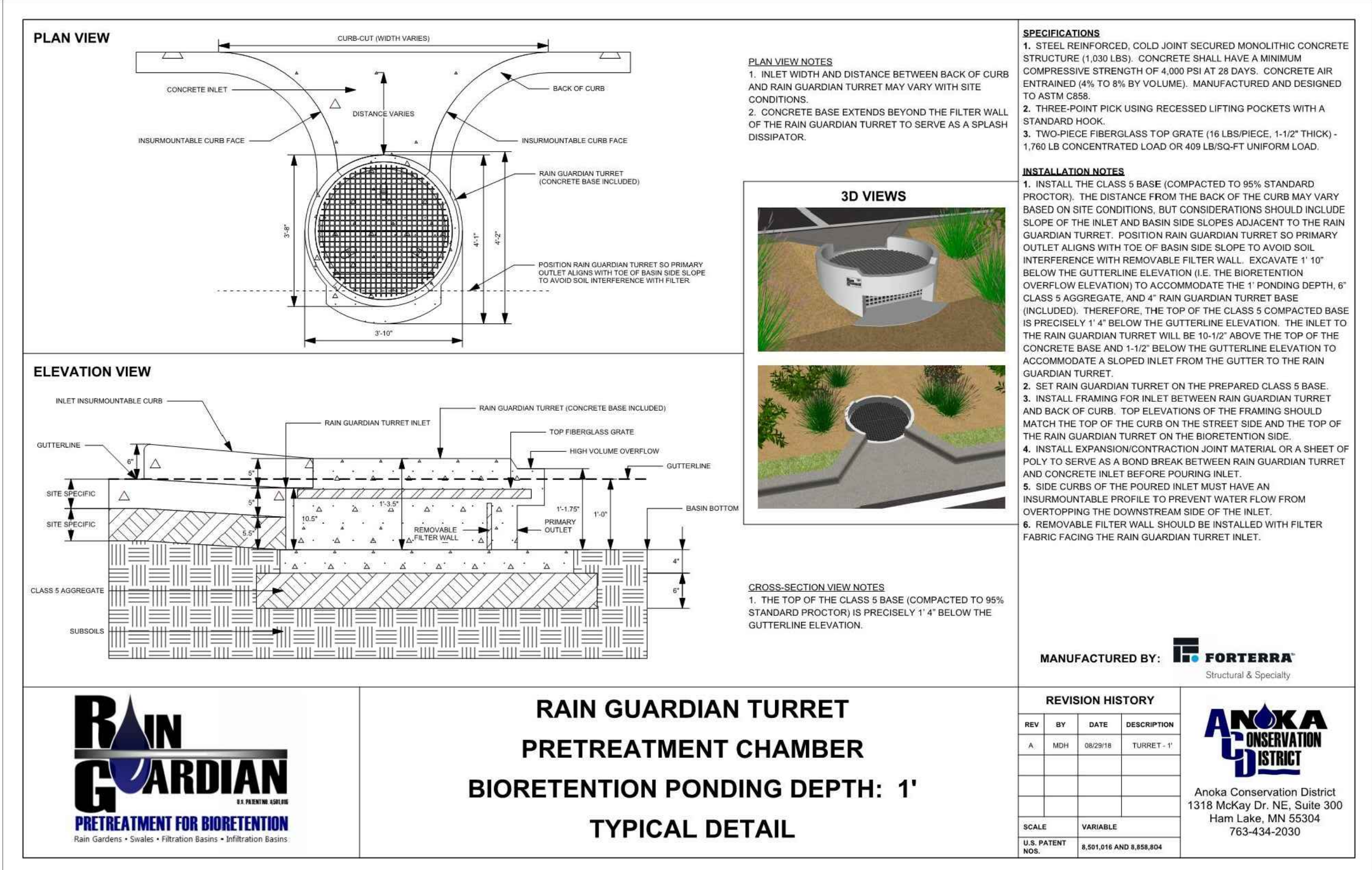
ISSUE DATE: 04/15/2020

ISSUE NO.: 0

SHEET TITLE:  
DETAILS

SHEET NO.:  
C-801



[illegible]

**CERTIFICATION:**

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Br K

LICENSE NO.: 25817

DATE: 04/15/2020

PROJECT NO.:	1886-0010
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DWN BY:	CHK'D BY:	APP'D BY:
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DMD	MSS	DPR
ISSUE DATE		01/15/2000

ISSUE NO.:	0
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SHEET TITLE:

## DETAILS

SHEET NO.:

C-802



PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER:	AARON GANSON 612-271-7026 AARON.GANSON@ADS-PIPE.COM
ADS SALES REP:	TOM ROONEY 612-756-3552 TOM.ROONEY@ADS-PIPE.COM
PROJECT NO:	S175211



ADVANCED DRAINAGE SYSTEMS, INC.



# KENTUCKY AVE WQ IMPROVEMENTS

## CRYSTAL, MN

### MC-3500 STORMTECH CHAMBER SPECIFICATIONS

- CHAMBERS SHALL BE STORMTECH MC-3500.
- CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
  - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
  - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
  - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
  - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
  - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
  - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

### IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-3500 CHAMBER SYSTEM

- STORMTECH MC-3500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
  - STONESHOOTER LOCATED OFF THE CHAMBER BED.
  - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
  - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
- INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
- STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

### NOTES FOR CONSTRUCTION EQUIPMENT

- STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- THE USE OF EQUIPMENT OVER MC-3500 CHAMBERS IS LIMITED:
  - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
  - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
  - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

**USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.**

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.



100	STORMTECH MC-3500 CHAMBERS
28	STORMTECH MC-3500 END CAPS
12	STONE ABOVE (in)
9	STONE BELOW (in)
40	% STONE VOID
<b>20,262</b>	<b>INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)</b>
6,097	SYSTEM AREA (ft²)
326	SYSTEM PERIMETER (ft)

877.00	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
871.00	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
870.50	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
870.50	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
870.50	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
870.00	TOP OF STONE
869.00	TOP OF MC-3500 CHAMBER
867.20	15" TOP MANIFOLD / CONNECTION INVERT
865.42	24" ISOLATOR ROW CONNECTION INVERT
865.25	BOTTOM OF MC-3500 CHAMBER
864.50	BOTTOM OF STONE

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECHNICAL NOTE 6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.

4640 TRUEMAN BLVD  
HILLIARD, OH 43026

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.



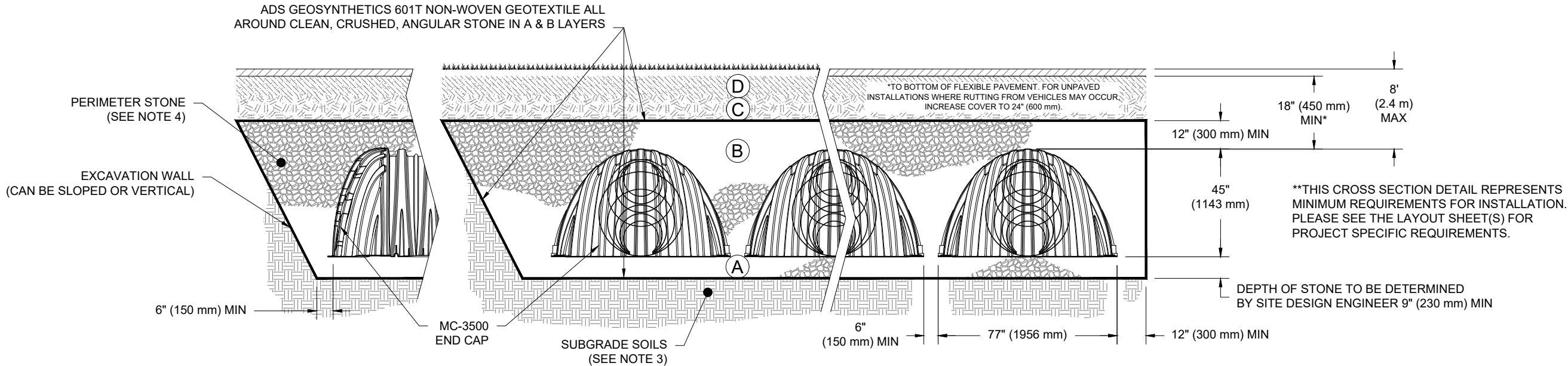




ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	<b>FINAL FILL:</b> FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	<b>INITIAL FILL:</b> FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE.  MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145 <sup>1</sup> A-1, A-2-4, A-3  OR  AASHTO M43 <sup>1</sup> 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	<b>EMBEDMENT STONE:</b> FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43 <sup>1</sup> 3, 4	NO COMPACTION REQUIRED.
A	<b>FOUNDATION STONE:</b> FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43 <sup>1</sup> 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. <sup>2,3</sup>

- PLEASE NOTE:
- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
  - STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
  - WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
  - ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

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- MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
  - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
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KENTUCKY AVE WQ IMPROVEMENTS

CRYSTAL, MN

DATE: 03/24/20

DRAWN: GGC

PROJECT #: S175211

CHECKED: JKL

ADJ/BOC ELEVATION TO 885.25' MOVE 4 CHAMBERS / ADJ VOLUME

REDRAW PER REVISED LAYOUT

DATE 04/06/20


TSG

GGC

DRWN


CHKD

DESCRIPTION



StormTech  
Detention/Retention/Water Quality

520 CROMWELL AVENUE | ROCKY HILL | CT | 06067  
860-529-8188 | 888-892-2694 | WWW.STORMTECH.COM



ADS  
ADVANCED DRAINAGE SYSTEMS, INC.

4640 TRUEMAN BLVD  
HILLIARD, OH 43026

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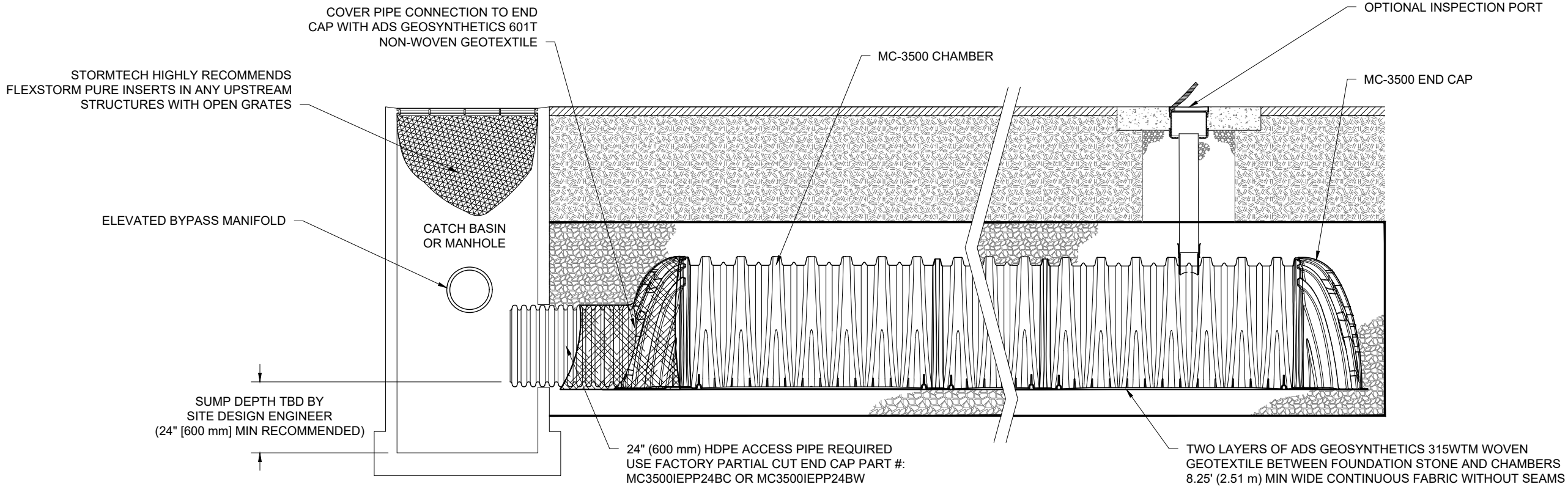
SHEET

OF

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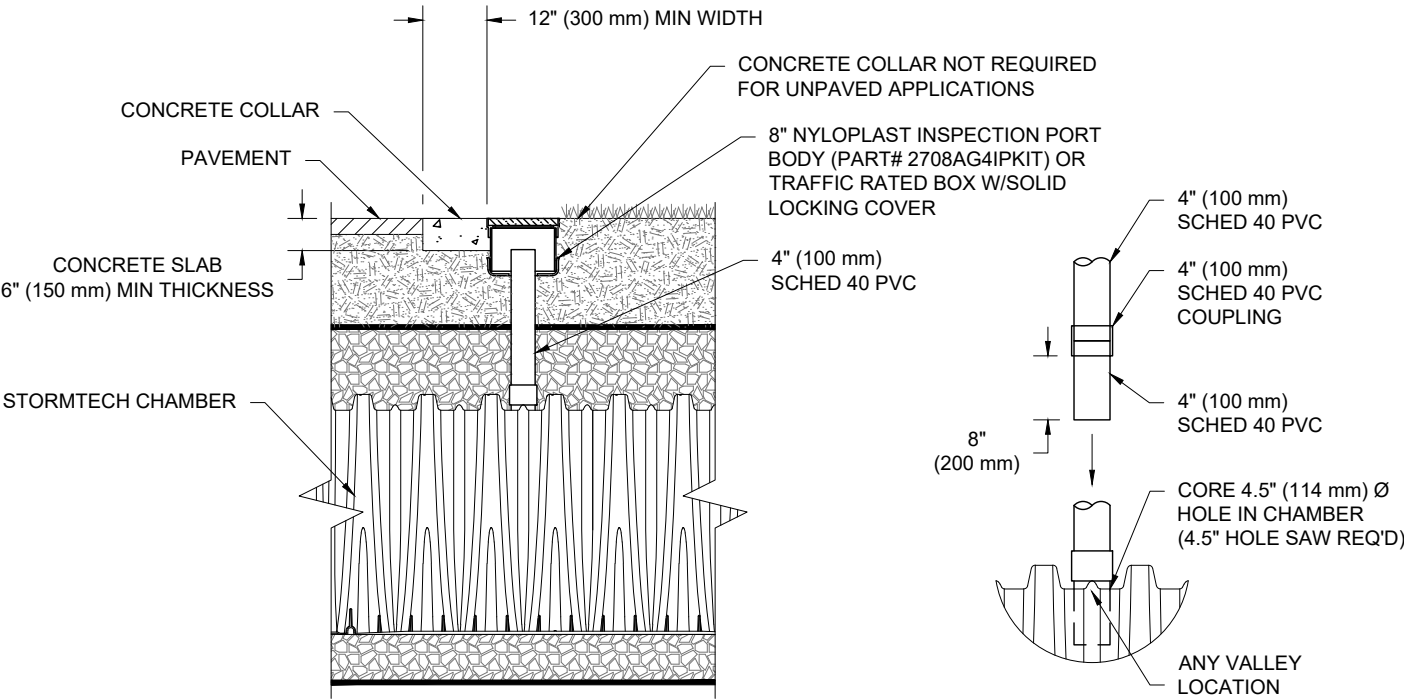
MC-3500 ISOLATOR ROW DETAIL  
NTS

INSPECTION & MAINTENANCE

- STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
- A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
- A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
- A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
- A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
- A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
- B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
- B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
- i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
- ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
- B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



- NOTES:
1. INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION VALLEY.
2. ALL SCHEDULE 40 FITTINGS TO BE SOLVENT CEMENTED (4 inch PVC NOT PROVIDED BY ADS).

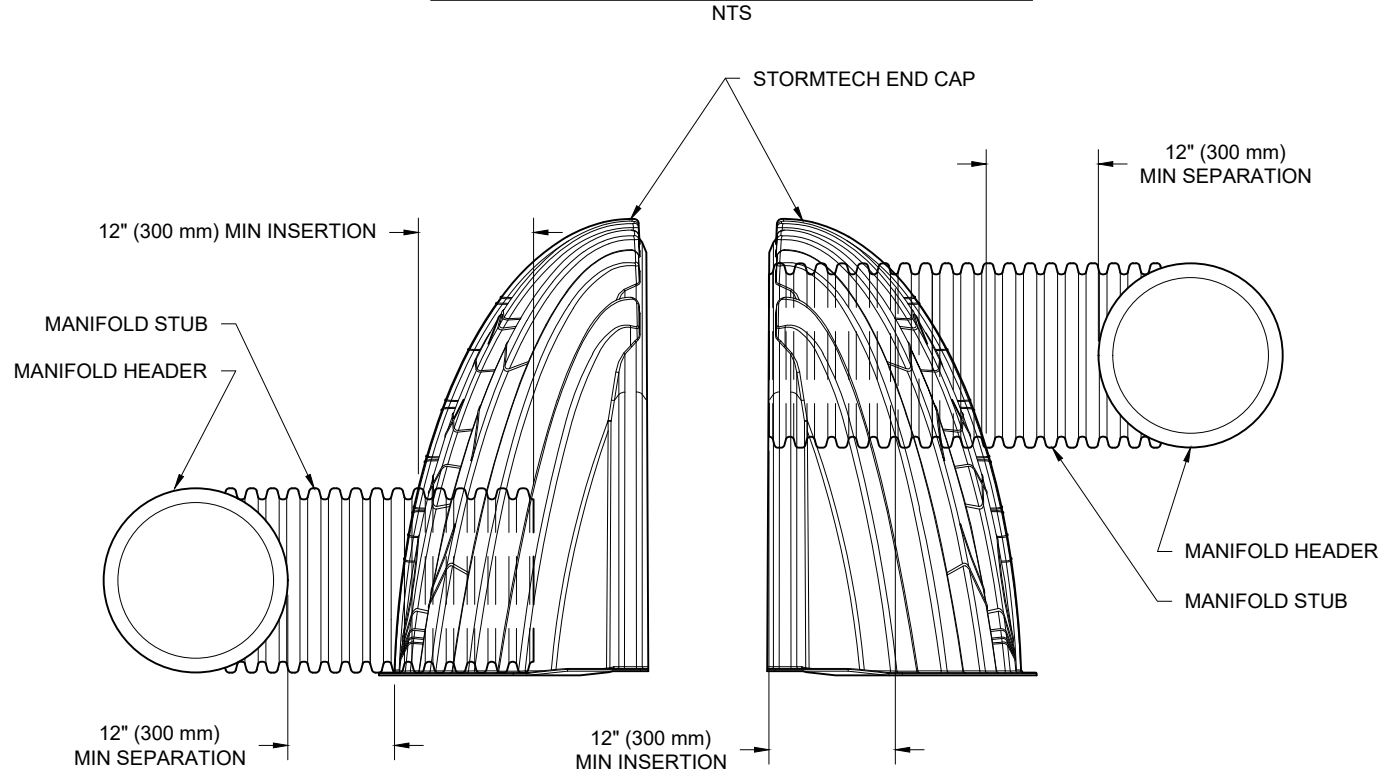
4" PVC INSPECTION PORT DETAIL  
NTS

CONNECTION DETAIL  
NTS

KENTUCKY AVE WQ IMPROVEMENTS		CRYSTAL, MN	
DATE:	03/24/20	DRAWN:	GGC
PROJECT #:	S175211	CHECKED:	JKL
ADJ BOC ELEVATION TO 885.25 MOVE 4 CHAMBERS / ADJ VOLUME		DESCRIPTION	
04/06/20	TSG	GGC	NAB
04/01/20	DATE	DRWN	CHKD
StormTech Detention/Retention/Water Quality 520 CROMWELL AVENUE   ROCKY HILL   CT   06067 860-529-8108   888-892-2694   WWW.STORMTECH.COM		4640 TRUEMAN BLVD HILLIARD, OH 43026 ADS ADVANCED DRAINAGE SYSTEMS, INC.	
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5		SHEET OF 7	

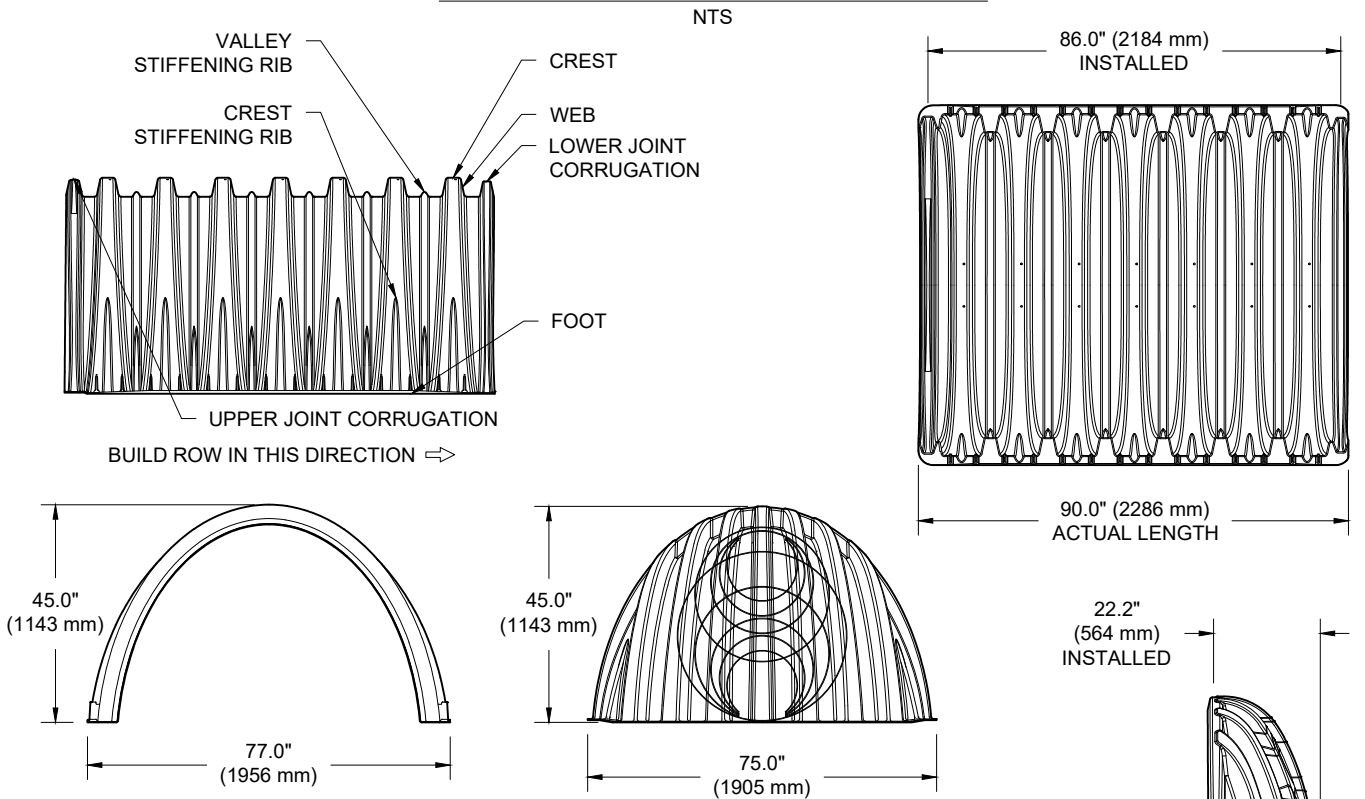


MC-SERIES END CAP INSERTION DETAIL



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

MC-3500 TECHNICAL SPECIFICATION



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 86.0"	(1956 mm X 1143 mm X 2184 mm)
CHAMBER STORAGE	109.9 CUBIC FEET	(3.11 m³)
MINIMUM INSTALLED STORAGE*	175.0 CUBIC FEET	(4.96 m³)
WEIGHT	134 lbs.	(60.8 kg)

NOMINAL END CAP SPECIFICATIONS

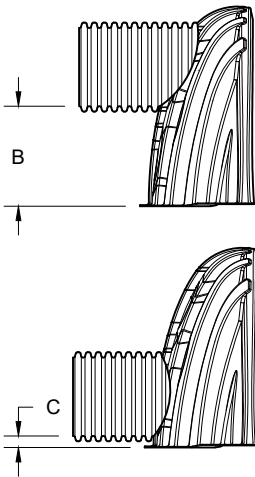
SIZE (W X H X INSTALLED LENGTH)	75.0" X 45.0" X 22.2"	(1905 mm X 1143 mm X 564 mm)
END CAP STORAGE	14.9 CUBIC FEET	(0.42 m³)
MINIMUM INSTALLED STORAGE*	45.1 CUBIC FEET	(1.28 m³)
WEIGHT	49 lbs.	(22.2 kg)

\*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION, 6" (152 mm) STONE BETWEEN CHAMBERS, 6" (152 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"  
PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"  
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"  
END CAPS WITH A WELDED CROWN PLATE END WITH "C"

PART #	STUB	B	C
MC3500IEPP06T	6" (150 mm)	33.21" (844 mm)	---
MC3500IEPP06B		---	0.66" (17 mm)
MC3500IEPP08T	8" (200 mm)	31.16" (791 mm)	---
MC3500IEPP08B		---	0.81" (21 mm)
MC3500IEPP10T	10" (250 mm)	29.04" (738 mm)	---
MC3500IEPP10B		---	0.93" (24 mm)
MC3500IEPP12T	12" (300 mm)	26.36" (670 mm)	---
MC3500IEPP12B		---	1.35" (34 mm)
MC3500IEPP15T	15" (375 mm)	23.39" (594 mm)	---
MC3500IEPP15B		---	1.50" (38 mm)
MC3500IEPP18TC	18" (450 mm)	20.03" (509 mm)	---
MC3500IEPP18TW		---	1.77" (45 mm)
MC3500IEPP18BC			
MC3500IEPP18BW			
MC3500IEPP24TC	24" (600 mm)	14.48" (368 mm)	---
MC3500IEPP24TW		---	2.06" (52 mm)
MC3500IEPP24BC			
MC3500IEPP24BW			
MC3500IEPP30BC	30" (750 mm)	---	2.75" (70 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL



CUSTOM PARTIAL CUT INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-3500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

KENTUCKY AVE WQ IMPROVEMENTS

CRYSTAL, MN

DATE: 03/24/20

DRAWN: GGC

PROJECT #: S175211

CHECKED: JKL

DATE	DRWN	CHKD	DESCRIPTION
04/06/20	TSG	GGC	ADJ BOC ELEVATION TO 885.25 MOVE 4 CHAMBERS / ADJ VOLUME
04/01/20	NAB	GGC	REDRAW PER REVISED LAYOUT

**StormTech**  
Detention/Retention/Water Quality

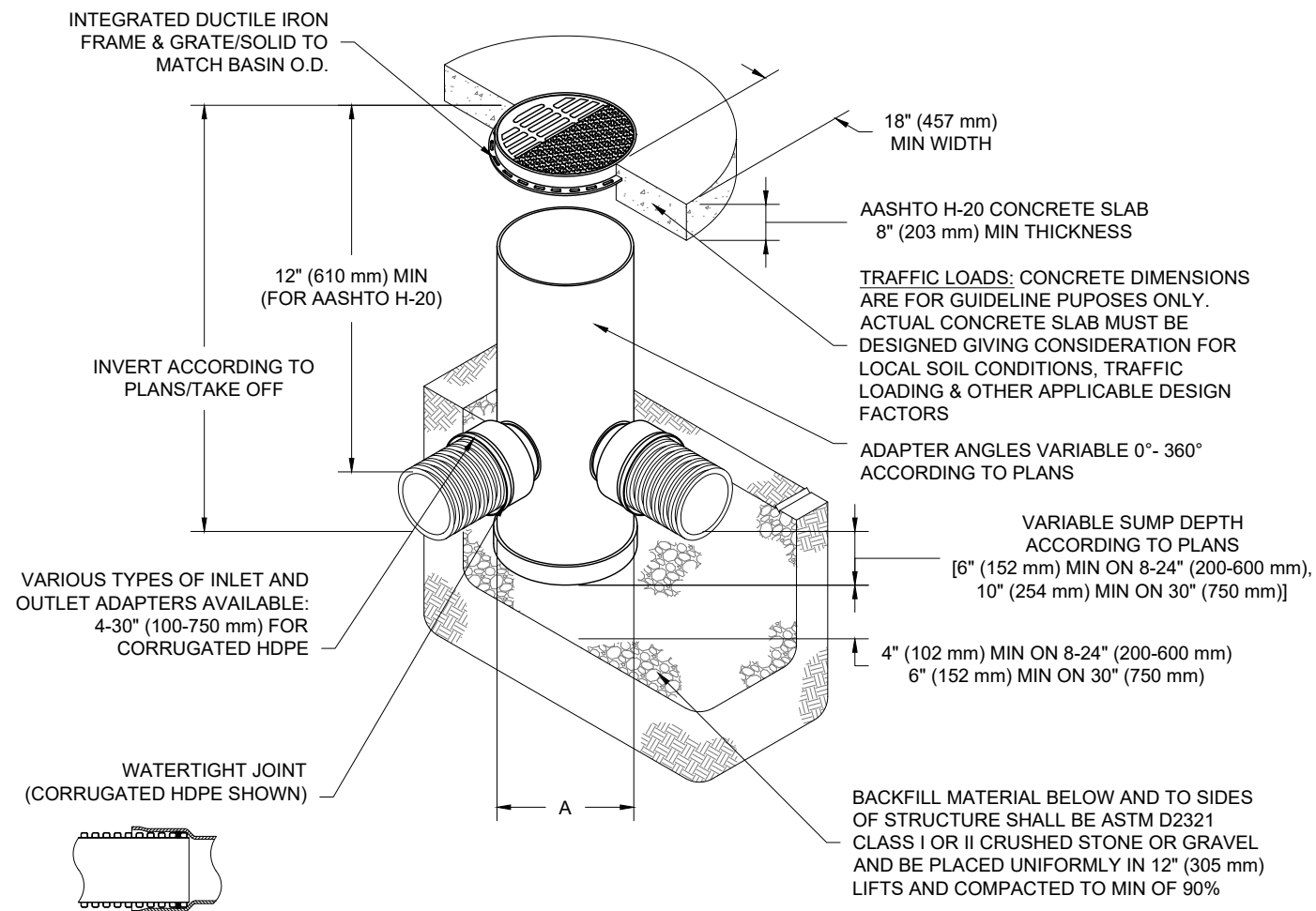
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860-525-8188 | 888-892-2694 | WWW.STORMTECH.COM

4640 TRUEMAN BLVD  
HILLIARD, OH 43026

**ADS**  
ADVANCED DRAINAGE SYSTEMS, INC.



## NTS



1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

## KENTUCKY AVE WQ IMPROVEMENTS

CRYSTAL, MN

DATE:	03/24/20	DRAWN:	GGC
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PROJECT #:	S175211	CHECKED:	JKL
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[illegible]

3130 VERONA AVE  
 BUFORD, GA 30518  
 PHN (770) 932-2443  
 FAX (770) 932-2490  
 www.nyloplast-us.com



4640 TRUEMAN BLVD  
HILLIARD, OH 43026



ADVANCED DRAINAGE SYSTEMS, INC.

THIS DRAWING WAS PREPARED BASED ON INFORMATION PROVIDED TO AAS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER FOR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER THAT THE PROJECT UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER SHALL COMPLY WITH ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS. THE SITE DESIGN ENGINEER SHALL BE RESPONSIBLE FOR THE DESIGN OF THE PROJECT AND ASSOCIATED DETAILS, MEANS, METHODS, AND MATERIALS.



BUILD NEW STORM MANHOLE  
OVER EXISTING STORM SEWER

STMH-1  
RIM=872.62  
18" INV IN=868.70 (SW)  
12" INV IN=868.80 (NW)  
24" INV OUT=867.00 (S)  
18" INV OUT=868.70 (NE)

STMH-2 WITH PRESERVER  
RIM=873.03  
24" INV IN=866.70 (W)  
24" INV OUT=866.70 (E)  
4' SUMP=862.70

42 LF OF 24" RCP @ 0.36%

CBMH-2  
RIM=871.50

STMH-1 TO ADS MC-3500 PROFILE

STMH-2 WITH PRESERVER  
RIM=873.03  
24" INV IN=866.70 (W)  
24" INV OUT=866.70 (E)

ADS MC-3500 SYSTEM NOT DRAWN TO SCALE

TOP OF STONE

875