

GENERAL GRADING AND EROSION CONTROL NOTES

- THE CONTRACTOR SHALL CONDUCT OPERATIONS AND IMPLEMENT MINNESOTA POLLUTION CONTROL AGENCY (MPCA) BEST MANAGEMENT PRACTICES (BMP) TO CONTROL SITE SILTATION AND EROSION INTO DRAINAGE WAYS. THE CONTRACTOR SHALL COMPLY WITH ALL CONDITIONS AND COMPLETION DATES RELATIVE TO ALL PERMITS ISSUED FOR THE WORK TO BE COMPLETED. THE ENGINEER MAY ISSUE A STOP WORK ORDER FOR ALL DEVELOPMENT WORK AND BUILDING CONSTRUCTION FOR NONCOMPLIANCE WITH THESE MEASURES.
- SEQUENCING. ALL SILT FENCE AND OTHER EROSION CONTROL MEASURES SHALL BE IN PLACE AND APPROVED BY ENGINEER PRIOR TO ANY REMOVALS, EXCAVATION OR CONSTRUCTION AND SHALL BE MAINTAINED UNTIL Viable TURF OR GROUND COVER HAS BEEN ESTABLISHED AND APPROVED BY THE ENGINEER.
- SILT FENCE. THE CONTRACTOR SHALL INSTALL SILT FENCE AT THE LOCATIONS SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE CITY STANDARD DETAILS. SILT FENCE DAMS AND INTERIM SUMP SHALL BE PLACED TO INTERCEPT SILT FROM CONCENTRATED RUNOFF FROM OPEN GRADED AREAS. ADDITIONAL SILT FENCE SHALL BE REQUIRED AS DIRECTED BY THE ENGINEER.
- STOCKPILES. ALL STOCKPILE AREAS SHALL HAVE SILT FENCE OR SEDIMENT TRAPPING SYSTEMS PLACED AROUND THE ENTIRE PERIMETER.
- INLET PROTECTION. THE CONTRACTOR SHALL INSTALL INLET PROTECTION ON ALL EXISTING STORM SEWER INLETS IN ACCORDANCE WITH THE CITY STANDARD DETAILS. INLET PROTECTION SHALL ALSO BE PROVIDED ON ALL PROPOSED STORM SEWER INLETS IMMEDIATELY FOLLOWING CONSTRUCTION OF THE INLET. INLET PROTECTION MUST BE INSTALLED IN A MANNER THAT PRESENTS A HAZARD TO VEHICULAR OR PEDESTRIAN TRAFFIC.
- TEMPORARY SEDIMENT BASINS. THE CONTRACTOR SHALL INCORPORATE TEMPORARY SEDIMENT BASINS THROUGHOUT THE CONSTRUCTION SITE TO CAPTURE RUNOFF AND SLOW THE FLOW OF WATER AND ALLOW SEDIMENT TO SETTLE OUT. TEMPORARY SEDIMENT BASINS SHALL BE INSTALLED AS DIRECTED BY THE CITY ENGINEER.
- ROCK CONSTRUCTION ENTRANCE. A ROCK ENTRANCE SHALL BE CONSTRUCTED AND MAINTAINED AS SHOWN ON THE PLAN TO REDUCE TRACKING OF SILT AND DIRT ONTO THE PUBLIC STREETS. A GEOTEXTILE FABRIC SHALL BE PLACED UNDERNEATH THE ROCK. THE ROCK SHALL BE PERIODICALLY REPLISHED TO MAINTAIN THE INTENDED PERFORMANCE. MUD AND DEBRIS SHALL BE REMOVED OR SCRAPED FROM TIRES AND VEHICLE UNDERCARRIAGE PRIOR TO LEAVING THE SITE.
- STREET SWEEPING. ALL STREETS USED FOR ACCESS TO THE SITE AND HAUL ROUTES USED FOR CONSTRUCTION EQUIPMENT AND MATERIAL SUPPLIES SHALL BE CLEANED AT THE END OF EACH WORKING DAY. THE CITY OR ENGINEER MAY ORDER ADDITIONAL SWEEPING OF THE STREETS AS DEEMED REQUIRED AT DEVELOPER/CONTRACTOR EXPENSE.
- DEWATERING. EACH EXCAVATION SHALL BE KEPT DRY DURING THE COURSE OF ALL WORK HEREIN, INCLUDING SUBGRADE CORRECTION, PIPE INSTALLATION, STRUCTURE CONSTRUCTION AND BACKFILLING, TO THE EXTENT THAT NO DAMAGE FROM HYDROSTATIC PRESSURE, FLOATATION OR OTHER DAMAGE RESULTS. ALL EXCAVATIONS SHALL BE DEWATERED TO A DEPTH OF AT LEAST 3 INCHES BELOW THE BOTTOM OF THE CONCRETE SLAB OR PIPE TO BE INSTALLED THEREIN. THE CONTRACTOR MAY USE ANY METHOD OR COMBINATION OF METHODS FOR DEWATERING HE CHOOSES; HOWEVER, ALL DEWATERING METHODS AND EQUIPMENT WHICH IN THE OPINION OF THE ENGINEER, ARE INEFFECTIVE SHALL BE ABANDONED, IMPROVED, REPLACED OR OTHERWISE ALTERED TO OBTAIN EFFECTIVE DEWATERING. THE CONTRACTOR SHALL PROVIDE ALL POWER, PUMPS, MATERIALS AND APPARATUS NECESSARY, AND SHALL BE RESPONSIBLE FOR DISPOSING OF THE WATER PUMPED FROM THE EXCAVATION IN A MANNER WHICH WILL NOT INTERFERE WITH OTHER WORK WITHIN THE AREA AND NOT TO DAMAGE PUBLIC OR PRIVATE PROPERTY. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE CONDITION OF ANY PIPE, CONDUIT, DITCH, CHANNEL OR NATURAL WATERCOURSE UTILIZED FOR DRAINAGE PURPOSES, AND ALL EROSION, SEDIMENT OR OTHER ADVERSE RESULTS OF THEIR USE SHALL BE REPAIRED.
- POSITIVE DRAINAGE AND PROTECTION. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE THROUGHOUT THE SITE AT ALL TIMES. LOW POINTS WITHIN AND ALONG ROADWAYS ARE EXPRESSLY PROHIBITED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY DITCHES, PIPING OR OTHER MEANS TO FACILITATE PROPER DRAINAGE DURING CONSTRUCTION. TO PROTECT PREVIOUSLY GRADED AREAS FROM EROSION, WOOD FIBER BLANKET SHALL BE PLACED IMMEDIATELY ON STEEP SLOPES (1:3 OR GREATER) AND EMBANKMENTS, PERMANENT AND TEMPORARY PONDS, AND OUTLETS AND OVERFLOWS TO PROTECT THE COMPLETED GRADE AND MINIMIZE SILT IN THE RUNOFF.
- DRAINAGE DITCHES. THE NORMAL WETTED PERIMETER OF ANY TEMPORARY OR PERMANENT DRAINAGE DITCH OR SWALE THAT DRAINS WATER FROM ANY PORTION OF THE CONSTRUCTION SITE OR AROUND THE SITE MUST BE STABILIZED WITHIN 200 LINEAL FEET FROM THE PROPERTY EDGE, OR FROM THE POINT OF DISCHARGE INTO ANY SURFACE WATER. STABILIZATION OF THE LAST 200 LINEAL FEET MUST BE COMPLETED WITHIN 24 HOURS AFTER CONNECTING TO A SURFACE WATER. STABILIZATION OF THE REMAINING PORTIONS OF ANY TEMPORARY OR PERMANENT DITCHES OR SWALES MUST BE COMPLETED WITHIN 14 DAYS AFTER CONNECTING TO A SURFACE WATER. CONSTRUCTION IN THAT PORTION OF THE DITCH HAS TEMPORARILY OR PERMANENTLY CEASED. TEMPORARY OR PERMANENT DITCHES OR SWALES THAT ARE BEING USED AS A SEDIMENT CONTAINMENT SYSTEM (WITH PROPERLY DESIGNED ROCK DITCH CHECKS, BIO ROLLS, SILT DIKES, ETC.) DO NOT NEED TO BE STABILIZED. THESE AREAS MUST BE STABILIZED WITHIN 24 HOURS AFTER NO LONGER BEING USED AS A SEDIMENT CONTAINMENT SYSTEM.
- TURF ESTABLISHMENT. ALL EXPOSED SOIL AREAS MUST BE STABILIZED AS SOON AS POSSIBLE TO LIMIT SOIL EROSION BUT IN NO CASE LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.
- MAINTENANCE AND INSPECTION. EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION AND UNTIL SATISFACTORY ESTABLISHMENT OF PERMANENT GROUND COVER IS OBTAINED. ALL EROSION AND SEDIMENTATION CONTROL MEASURES, AND STORMWATER OUTFALLS MUST BE INSPECTED WEEKLY, AND WITHIN 24 HOURS OF THE SITE RECEIVING 0.5 INCHES OF RAIN. REPAIRS MUST BE MADE ON THE SAME DAY OR FOLLOWING DAY OF THE INSPECTION. UNSATISFACTORY CONDITIONS NOT REPAIRED OR CLEANED UP WITHIN 48 HOURS OF NOTIFICATION SHALL RESULT IN A STOP WORK ORDER, AND/OR SAID WORK SHALL BE COMPLETED AT CONTRACTOR'S EXPENSE.
- REMOVAL. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL TEMPORARY EROSION CONTROL MEASURES, STRUCTURES AND DEVICES ONLY AFTER RECEIVING ENGINEER APPROVAL. ALL DEBRIS, STAKES, AND SILTS ALONG SILT FENCES SHALL BE REMOVED AND DISPOSED OFF SITE. THE CONTRACTOR SHALL HAND RAKE SILTED AREAS ALONG THE FENCE LOCATIONS TO PROVIDE A SMOOTH FINAL GRADE AND SHALL RESTORE THE GROUND SURFACE WITH SEED OR SOD, AS REQUIRED, TO MATCH THE FINISHED GRADE TO THE ADJACENT AREA.
- FINAL STORM SEWER SYSTEM. AT THE COMPLETION OF THE WORK AND BEFORE THE FINAL WALK THROUGH, THE CONTRACTOR SHALL REMOVE STORM SEWER INLET PROTECTION MEASURES THROUGHOUT THE CONSTRUCTION SITE. ALL EXCESS SEDIMENT, SEDIMENT AND DEBRIS SHALL BE COMPLETELY REMOVED AND CLEANED AT THE INLETS, OUTLETS, AND DOWNSTREAM OF EACH OUTLET. RIPRAP AND GEOTEXTILE FABRIC MAY REQUIRE REPLACEMENT AS DIRECTED BY THE ENGINEER TO OBTAIN A LIKE NEW INSTALLATION ACCEPTABLE TO THE CITY.
- DITCH CHECK (BIOROLL BLANKET SYSTEM). BIOROLL AND BLANKET SYSTEMS SHALL BE INSTALLED AS DITCH CHECKS AT SPECIFIED LOCATIONS AS APPROVED BY THE CITY ENGINEER. BIOROLLS ARE NOT TO BE UTILIZED IN AREAS WHERE VEHICLE AND CONSTRUCTION TRAFFIC OCCUR.
- FLOTATION SILT CURTAIN. FLOTATION SILT CURTAIN SHALL BE UTILIZED WHEN CONSTRUCTION ACTIVITIES OCCUR DIRECTLY ADJACENT TO LAKES, STREAMS OR WETLANDS IN ORDER TO CONTAIN SEDIMENTS NEAR THE BANKS OF WORKING AREAS. THE INSTALLATION OF FLOTATION SILT CURTAINS WILL BE REQUIRED AS DIRECTED BY THE CITY ENGINEER.
- CONCRETE WASHOUT ONSITE. ALL LIQUID AND SOLID WASTES GENERATED BY CONCRETE WASHOUT OPERATIONS MUST BE CONTAINED IN A LEAK-PROOF CONTAINMENT FACILITY OR IMPERMEABLE LINER. A LEAK-PROOF CONTAINMENT FACILITY DOES NOT ALLOW WASHOUT LIQUIDS TO ENTER GROUND WATER IS CONSIDERED AN IMPERMEABLE LINER. THE LIQUID AND SOLID WASTES MUST NOT CONTACT THE GROUND, AND THERE MUST NOT BE RUNOFF FROM THE CONCRETE WASHOUT OPERATIONS OR AREAS. LIQUID AND SOLID WASTES MUST BE DISPOSED OF PROPERLY AND IN COMPLIANCE WITH MPCA REGULATIONS. A SIGN MUST BE INSTALLED ADJACENT TO EACH WASHOUT FACILITY TO INFORM CONCRETE EQUIPMENT OPERATORS TO UTILIZE THE PROPER FACILITIES.

- RESTORE ALL DISTURBED AREAS WITH 6 INCHES OF TOPSOIL
- PROTECT ALL STORM SEWER INLETS AS SPECIFIED HEREIN AND MAINTAIN UNTIL STREET CONSTRUCTION IS COMPLETED.
- MAINTAIN ALL SILT FENCE AND REPAIR OR REPLACE AS NEEDED OR REQUIRED UNTIL TURF HAS BEEN ESTABLISHED.
- RESTORATION WORK SHALL BEGIN WITHIN 7 DAYS OF FINAL GRADING.
- A MINIMUM OF 2 ROWS OF SOD SHALL BE PLACED ADJACENT TO THE BACK OF CURBS ALONG ALL BOULEVARDS. SILT FENCE SHALL BE PLACED DIRECTLY BEHIND THE SOD IN ACCORDANCE WITH THE CITY STANDARD DETAILS.

STORMWATER RUNOFF SUMMARY:
TOTAL PROPERTY AREA = 3.77 ACRES
TOTAL DISTURBED AREA = 3.77 ACRES, THEREFORE A MPCA PERMIT WILL BE REQUIRED

1. ON-SITE AREAS AND RUNOFF COEFFICIENTS:
EXISTING CONDITIONS:
TOTAL SITE AREA: 3.77 ACRES
• PERVIOUS AREA: 2.479 ACRES
• PERVIOUS CN: 71
• IMPERVIOUS AREA: 0 ACRES
• IMPERVIOUS CN: 98

- POST-DEVELOPMENT:
TOTAL SITE AREA: 3.77 ACRES
• PERVIOUS AREA: 1.674 ACRES
• PERVIOUS CN: 74
• IMPERVIOUS AREA: 2.096 ACRES
• IMPERVIOUS CN: 98

2. EXISTING SITE PEAK DISCHARGE FOR DESIGN STORMS:
STORM SEWER FLOW TO CITY SYSTEM (SW DISCHARGE):
• 2-YR: 0.27 CFS
• 10-YR: 0.52 CFS
• 100-YR: 1.11 CFS
• SNOWMELT: 0.21 CFS

- SHEET FLOW OFF-SITE TO SE PROPERTY:
• 2-YR: 1.66 CFS
• 10-YR: 3.22 CFS
• 100-YR: 7.02 CFS
• SNOWMELT: 1.41 CFS

3. PROPOSED SITE PEAK DISCHARGE FOR DESIGN STORMS:
OVERLAND FLOW TO CR. 17:
• 2-YR: 0.00 CFS
• 10-YR: 0.00 CFS
• 100-YR: 0.00 CFS
• SNOWMELT: 0.00 CFS

- STORM SEWER FLOW SW TO CITY SYSTEM:
• 2-YR: 0.26 CFS
• 10-YR: 0.50 CFS
• 100-YR: 1.06 CFS
• SNOWMELT: 0.19 CFS

- STORM SEWER FLOW SE TO CITY SYSTEM:
• 2-YR: 0.63 CFS
• 10-YR: 0.93 CFS
• 100-YR: 1.52 CFS
• SNOWMELT: 0.46 CFS

- STORM SEWER NORTH TO VILLAGE PRESERVE POND:
• 2-YR: 0.25 CFS
• 10-YR: 0.30 CFS
• 100-YR: 1.47 CFS
• SNOWMELT: 0.26 CFS

4. OVERALL SITE PEAK DISCHARGE FOR DESIGN STORMS (SUMMED):
EXISTING SITE:
• 2-YR: 1.93 CFS
• 10-YR: 3.74 CFS
• 100-YR: 8.13 CFS
• SNOWMELT: 1.62 CFS

- PROPOSED SITE:
• 2-YR: 1.14 CFS
• 10-YR: 1.73 CFS
• 100-YR: 4.05 CFS
• SNOWMELT: 0.91 CFS

5. PROPOSED DETENTION AND ROUTING DEVICES

BIOPFILTRATION BASIN:
PONDING, BASE AREA 5314 SF, BASE EL. 940.00 FT, DEPTH 2.15' (EL. 942.15') AT 100-YR STORM. UNDERLAYING DRAINILE FILTRATION WITH MEDIA MIX A (1 INCH HOUR). UNDERDRAIN PIPE 4" DIA. LEADS INTO MANHOLE (INVERT 938.0'). 8" DIA. PIPE LEADS INTO MANHOLE (INVERT 941.5'). INSIDE MANHOLE IS A FLOW CONTROL STRUCTURE THAT COMBINES AN ORIFICE AND A WEIR. CIRCULAR ORIFICE OUTLET 6" DIAMETER, INVERT EL. 938.75'. WEIR OUTLET 4" WIDE AT EL. 940.75'. MANHOLE HAS OVERFLOW GRATE AT EL. 942.75'. MANHOLE OUTLET PIPE TO NORTH IS 8" DIA., INVERT EL. 936.80'. OUTLET EL. 935.67'. AND 86' LONG. SEE OVERFLOW STRUCTURE DETAIL 365 SHEET C.1.3 FOR DETAILS.

UNDERGROUND STORAGE:
STORMTECH MC-3500 WITH STORAGE CAPACITY OF 29,707 CF. 11 ROWS WITH 16 CHAMBERS PER ROW. FOOTPRINT APPROX. 120.5' LONG X 80.1' WIDE. 6" ORIFICE AT OUTLET INVERT EL. 933.59'. BROAD CRESTED WEIR 3' LONG OUTLET AT EL. 937.50'.

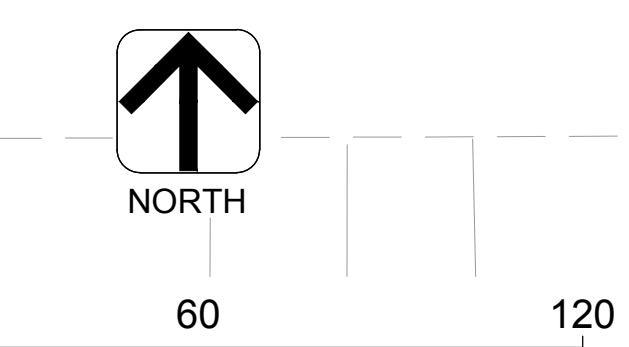
6. OVERLAND EMERGENCY OVERFLOW

- FROM BIOPFILTRATION BASIN TO NORTH
 - OVERFLOWS MANHOLE GRATE AT EL. 942.75' TO SWALE EL. 942.75'
 - FROM STORMTECH CHAMBER TO RELEASE MANHOLE ALONG 39TH ST TO SHEET FLOW ON 39TH ST
 - FROM INLET A2: INLET GRATE OUTLET AT EL. 940.98'. OVERLAND FLOW TO 39TH STREET
 - FROM INLET A1: INLET GRATE OUTLET AT EL. 938.20'. OVERLAND FLOW TO 39TH STREET
7. TOTAL SUSPENDED SOLIDS REDUCTION REQUIREMENT 80%. CALCULATED SITE REDUCTION: 93%
PHOSPHORUS REDUCTION REQUIREMENT: 75%. CALCULATED SITE REDUCTION: 91%
*UTILIZING MPCA MIDS SOFTWARE

GENERAL NOTES

- SPOT ELEVATIONS ARE TRUNCATED BY 900'.
- SPOT ELEVATIONS ARE FOR EDGE OF PAVEMENT OR SIDEWALK.
- WIDTHS ARE THE EDGE OF SIDEWALK OR FACE OF CURB.
- SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR BUILDING STOOP DETAILS.

FUTURE MIXED RESIDENTIAL DEVELOPMENT



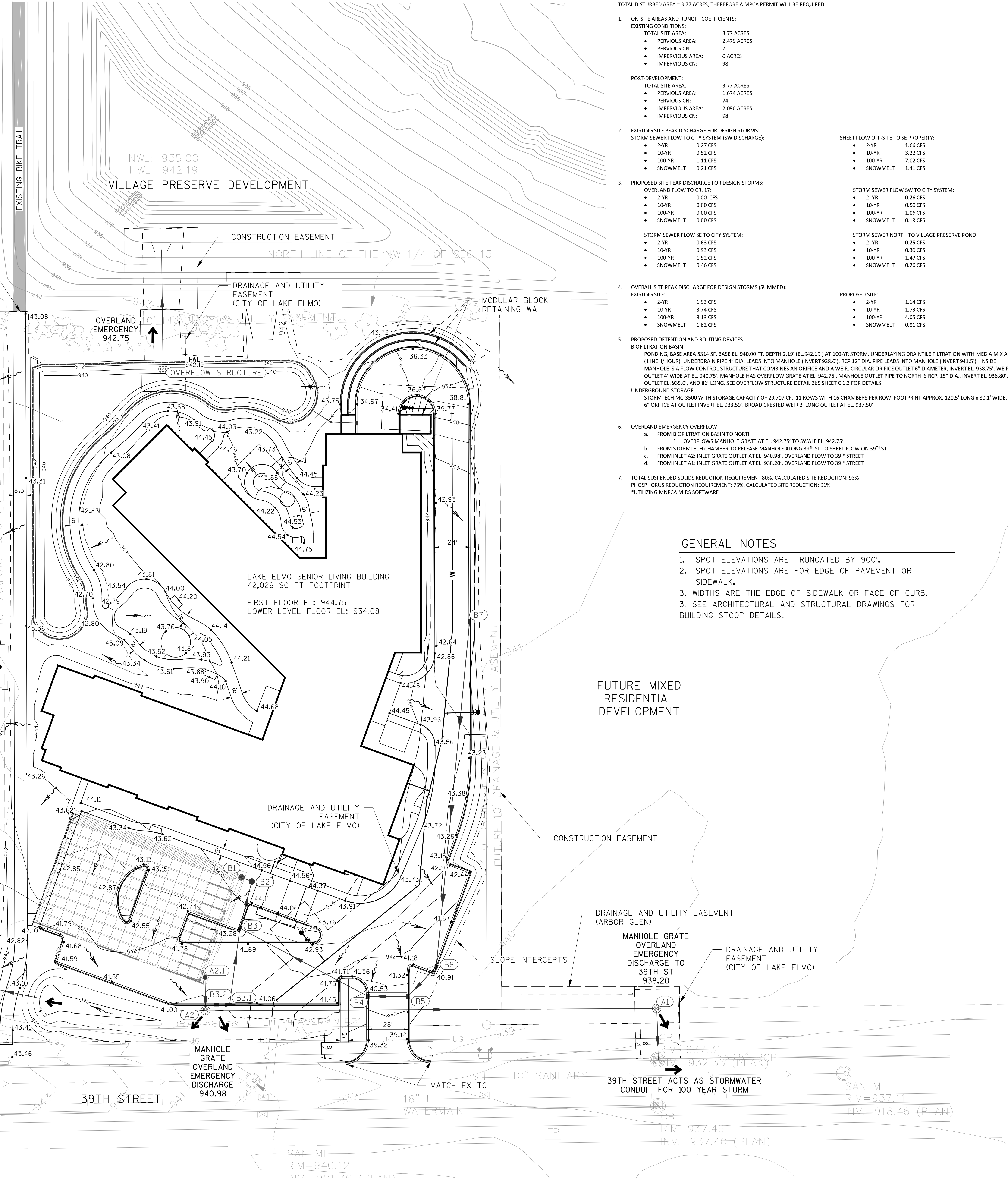
ELEVATIONS FROM VILLAGE PRESERVE PLAN. FIELD VERIFY ELEVATIONS TO ENSURE CORRECT VERTICAL GEOMETRY

BIOFILTRATION W/UNDERDRAIN
NW 1/2 940.90
HWL 100 942.19

STORMTECH MC-3500 CHAMBER
NW 1/2 934.46
HWL 100 937.20

MANHOLE GRATE OVERLAND EMERGENCY DISCHARGE
940.98

MANHOLE GRATE OVERLAND EMERGENCY DISCHARGE
940.98



I HEREBY CERTIFY THAT THIS PLAN AND SPECIFICATIONS REPORT WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THAT I AM A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MINNESOTA.
Signature: LISA A. FLEMING, P.E.
Date: _____
License Number: _____

MARK	DATE	DESCRIPTION
		REVIEW SET
		NOT FOR CONSTRUCTION

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SITE GRADING PLAN

PROJECT NO. 08-1721.00
C2.4
1.15.2016