06-01-22

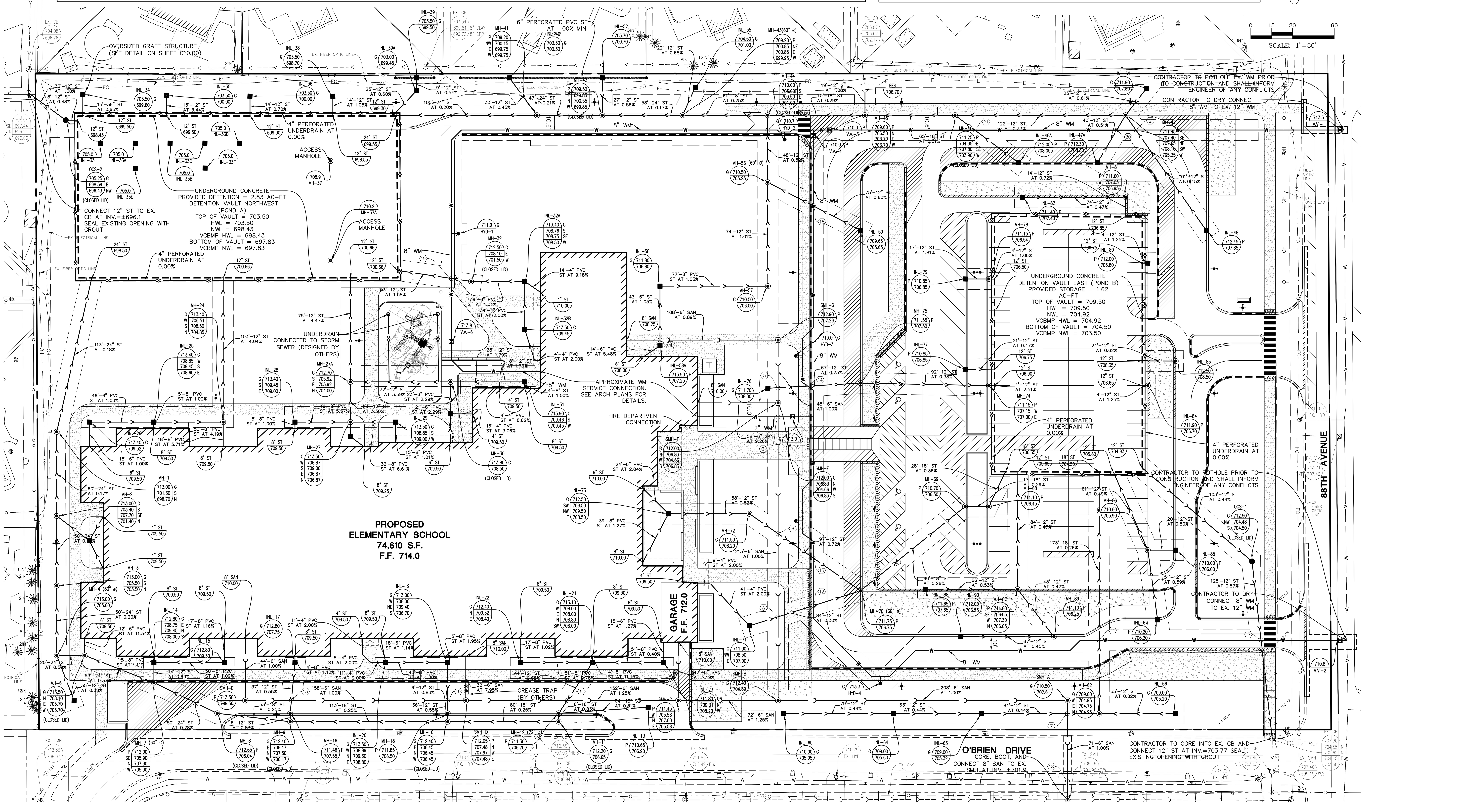
UTILITY NOTES:

1. ALL UTILITY DIMENSIONS ARE TO CENTER OF PIPE OR CENTER OF STRUCTURE UNLESS OTHERWISE NOTED.
2. BUILDING DIMENSIONS AND ADJACENT UTILITY LAYOUT HAVE BEEN PREPARED BASED UPON ARCHITECTURAL INFORMATION CURRENT AT THE DATE OF THIS DRAWING. SUBSEQUENT ARCHITECTURAL CHANGES MAY EXIST. THEREFORE CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR PRECISE BUILDING DIMENSIONS AND EXACT UTILITY ENTRANCE LOCATIONS AND NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL CONTACT J.U.L.I.E. (1–800–892–0123) PRIOR TO ANY WORK TO LOCATE UTILITIES AND SHALL CONTACT THE OWNER SHOULD UTILITIES APPEAR TO BE IN CONFLICT WITH THE PROPOSED IMPROVEMENT.
4. ROUTING OF GAS, ELECTRIC AND TELEPHONE SERVICES IF SHOWN ARE APPROXIMATE ONLY AND SUBJECT TO CHANGE BASED UPON FINAL REVIEW AND APPROVAL BY RESPECTIVE UTILITY COMPANIES AND OWNER. CONTRACTOR SHALL CONTACT EACH UTILITY COMPANY AND COORDINATE FINAL LOCATIONS FOR ALL UTILITY SERVICES PRIOR TO START OF CONSTRUCTION.
5. CONTRACTOR SHALL EXCAVATE AND VERIFY ALL EXISTING SEWER, WATER MAIN AND DRY UTILITY LOCATIONS, SIZES, CONDITIONS & ELEVATIONS AT PROPOSED POINTS OF CONNECTION AND CROSSINGS PRIOR TO ANY UNDERGROUND CONSTRUCTION AND NOTIFY THE OWNER OF ANY DISCREPANCIES OR CONFLICTS.
6. LIGHTING AND UNDERGROUND CABLE IF SHOWN ON PLANS ARE FOR APPROXIMATE LOCATION ONLY. REFER TO ARCHITECTURAL PLANS FOR SPECIFICATIONS AND DETAILS.
7. THE CONTRACTOR SHALL ADJUST RIM ELEVATIONS OF ALL EXISTING STRUCTURES TO PROPOSED FINISH GRADES.
8. CONTRACTOR TO VERIFY LOCATION, SIZES, AND ELEVATION OF ALL BUILDING SERVICE LOCATIONS WITH ARCHITECTURAL PLANS.
9. AT LOCATIONS WHERE WATER MAIN CROSSES BENEATH OR LESS THAN 18" ABOVE A SEWER, PROVIDE WATER MAIN PROTECTION PER STANDARD SPECIFICATIONS FOR SEWER AND WATER MAIN CONSTRUCTION IN ILLINOIS, LATEST EDITION.
10. ELEVATIONS GIVEN FOR STORM SEWER STRUCTURES LOCATED IN CURB LINE ARE PAVEMENT ELEVATIONS.
11. ALL WATER MAIN SHALL BE 5'–6" BELOW FINISHED GRADE TO TOP OF MAINS UNLESS NOTED OTHERWISE.
12. ALL EXISTING UTILITIES SHOWN ARE NOT TO BE INTERPRETED AS THE EXACT ELEVATION OR LOCATION, OR AS THE ONLY OBSTACLES THAT MAY OCCUR ON THE SITE. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND PROCEED WITH CAUTION AROUND ANY ANTICIPATED FEATURES.
13. THE UNDERGROUND UTILITY INFORMATION AS SHOWN HERE ON IS BASED, IN PART, UPON INFORMATION FURNISHED BY UTILITY COMPANIES AND THE LOCAL MUNICIPALITY. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, ITS ACCURACY AND COMPLETENESS CANNOT BE GUARANTEED NOR CERTIFIED.
14. ALL SANITARY AND STORM SEWER LENGTHS SHOWN ARE CENTER OF MANHOLE TO CENTER OF MANHOLE OR STORM MANHOLE TO FES.
15. PROVIDE CONCRETE COLLAR FOR ALL DRAINAGE STRUCTURES IN PAVEMENT, NOT ADJACENT TO CURB. SEE CONCRETE COLLAR DETAIL ON DETAIL SHEET.
16. CONTRACTOR SHALL CORE AND BOOT ALL PIPE ENTRANCES TO EXISTING SANITARY MANHOLES.
17. EXTERNAL CHIMNEY SEALS ARE REQUIRED ON PROPOSED AND ADJUSTED EXISTING SANITARY MANHOLES. ALL SANITARY SEWER MANHOLES WILL REQUIRE THE INSTALLATION OF EXTERNAL SEALING SUCH AS "WRAPIDSEAL™ MANHOLE ENCAPSULATION SYSTEM" OR "INFI–SHIELD EXTERNAL UNI–BAND" OR AN APPROVED EQUAL.
18. SOME EXISTING ITEMS TO BE REMOVED HAVE BEEN DELETED FROM THIS PLAN FOR CLARITY. SEE DEMOLITION PLAN FOR ITEMS DELETED.
19. ALL D.I. WATERMAIN PIPE AND D.I. WATERMAIN FITTINGS SHALL BE WRAPPED.

UTILITY CROSSINGS

No.	Crossing	Elevations	Remark
1	ST OVER WM	B/P ST = 704.88; T/P WM = 703.38	*LOWER WM*
2	ST OVER WM	B/P ST = 707.29; T/P WM = 705.79	*LOWER WM*
3	SAN OVER WM	B/P SAN = 706.71; T/P WM = 705.21	*LOWER WM*
4	SAN OVER ST	B/P SAN = 708.11; T/P ST = 707.73	**CRITICAL CROSSING**
5	ST OVER SAN	B/P ST = 707.78; T/P SAN = 707.46	**CRITICAL CROSSING**
6	ST OVER SAN	B/P ST = 707.85; T/P SAN = 706.41	
7	ST OVER SAN	B/P ST = 704.68; T/P SAN = 703.04	
8	ST OVER SAN	B/P ST = 706.77; T/P SAN = 705.82	
9	ST OVER SAN	B/P ST = 707.61; T/P SAN = 706.74	**CRITICAL CROSSING**
10	ST OVER SAN	B/P ST = 707.88; T/P SAN = 707.61	**CRITICAL CROSSING**
11	ST OVER WM	B/P ST = 704.41; T/P WM = 702.91	*LOWER WM*
12	ST OVER WM	B/P ST = 706.69; T/P WM = 705.19	*LOWER WM*
13	ST OVER WM	B/P ST = 707.63; T/P WM = 706.13	*LOWER WM*
14	ST OVER WM	B/P ST = 707.44; T/P WM = 705.94	*LOWER WM*
15	SAN OVER ST	B/P SAN = 708.20; T/P ST = 708.07	*CRITICAL CROSSING*
16	ST OVER WM	B/P ST = 705.25; T/P WM = 703.75	*LOWER WM*
17	ST OVER WM	B/P ST = 704.01; T/P WM = 702.51	*LOWER WM*
18	EX. WM OVER SAN	B/P EX. WM = 702.94; T/P SAN = 702.55	**CRITICAL CROSSING**
19	WM OVER ST	B/P WM = 703.69; T/P ST = 702.19	**CRITICAL CROSSING**
20	ST OVER WM	B/P ST = 707.99; T/P WM = 706.49	*LOWER WM*
21	ST OVER WM	B/P ST = 707.71; T/P WM = 706.21	*LOWER WM*

NOTE: WATER AND SEWER CROSSINGS SHALL MEET STATE EPA SEPARATION AND PIPE MATERIAL REQUIREMENTS. (SEE DETAIL SHEET)



KIRBY SCHOOL DISTRICT 140

2023

NEW FERNWAY PARK ELEMENTARY SCHOOL

16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

TRIA ARCHITECTURE

PROJECT NUMBER:	21-054.1
PROJECT MANAGER:	MG
DRAWN BY:	
ISSUED FOR BID:	
10/30/2023	

REVISIONS: 1 2 3 4 5

UTILITY PLAN

C8.00

06-01-22

UTILITY NOTES:

1. ALL UTILITY DIMENSIONS ARE TO CENTER OF PIPE OR CENTER OF STRUCTURE UNLESS OTHERWISE NOTED.
2. BUILDING DIMENSIONS AND ADJACENT UTILITY LAYOUT HAVE BEEN PREPARED BASED UPON ARCHITECTURAL INFORMATION CURRENT AT THE DATE OF THIS DRAWING. SUBSEQUENT ARCHITECTURAL CHANGES MAY EXIST. THEREFORE CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR PRECISE BUILDING DIMENSIONS AND EXACT UTILITY ENTRANCE LOCATIONS AND NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
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16. CONTRACTOR SHALL CORE AND BOOT ALL PIPE ENTRANCES WITH A WATERTIGHT BOOT CONNECTION CONFORMING TO ASTM C-923 TO EXISTING SANITARY MANHOLES.
17. EXTERNAL CHIMNEY SEALS ARE REQUIRED ON PROPOSED AND ADJUSTED EXISTING SANITARY MANHOLES. ALL SANITARY SEWER MANHOLES WILL REQUIRE THE INSTALLATION OF EXTERNAL SEALING SUCH AS "WRAPIDSEAL™ MANHOLE ENCAPSULATION SYSTEM" OR "INFI-SHIELD EXTERNAL UNI-BAND" OR AN APPROVED EQUAL.
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UTILITY CROSSINGS

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1	ST OVER WM	B/P ST = 705.51	T/P WM = 704.01	*LOWER WM*
2	ST OVER WM	B/P ST = 705.28	T/P WM = 703.78	*LOWER WM*
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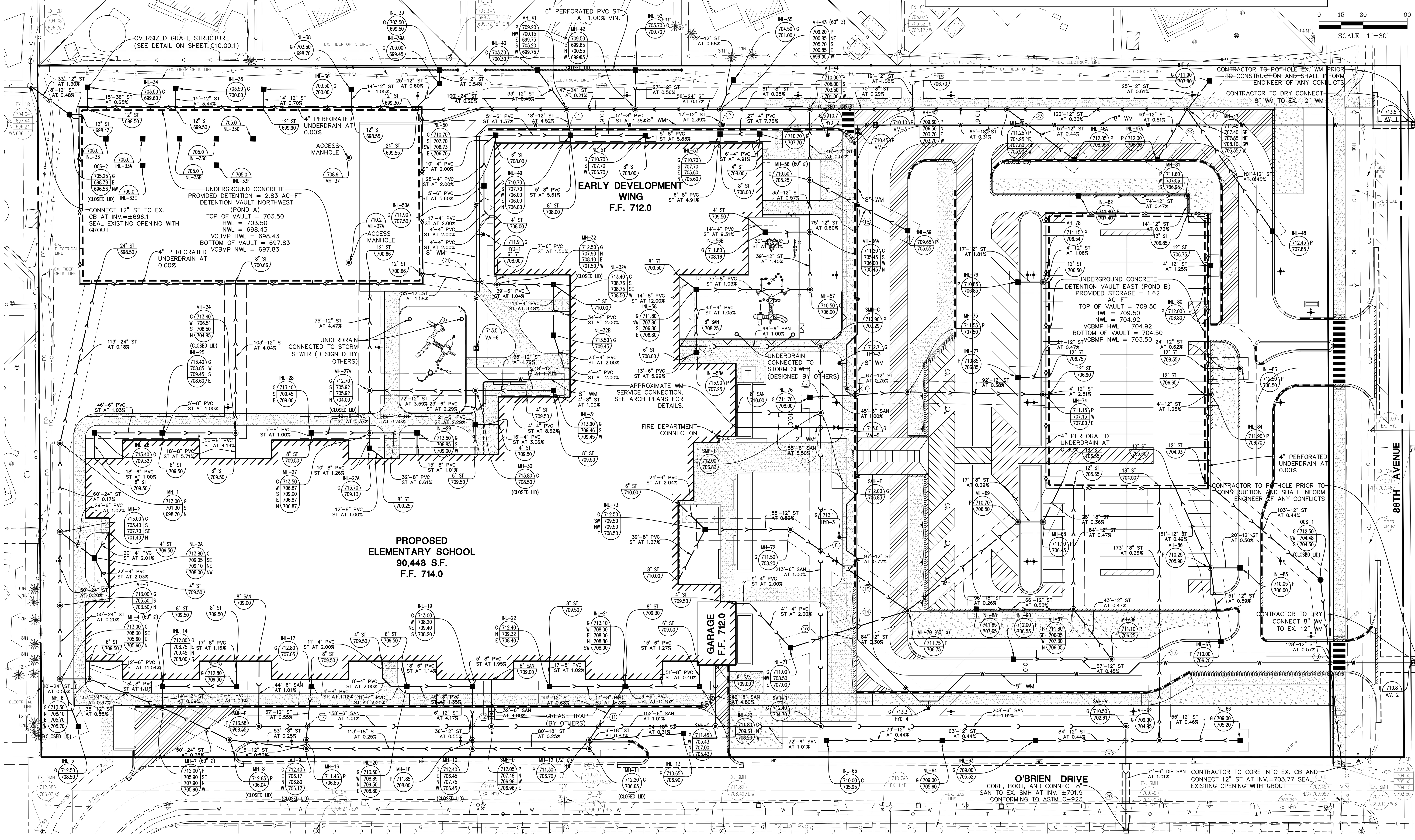
NOTE: WATER AND SEWER CROSSINGS SHALL MEET STATE EPA SEPARATION AND PIPE MATERIAL REQUIREMENTS. (SEE DETAIL SHEET)



KIRBY SCHOOL DISTRICT 140

2023

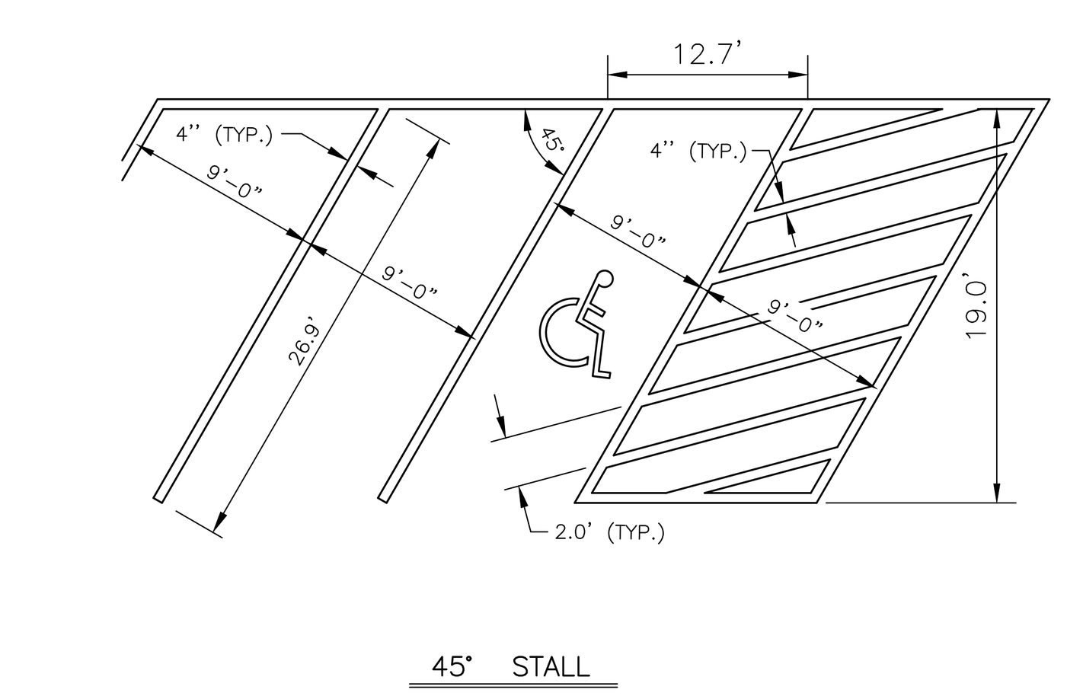
NEW FERNWAY PARK ELEMENTARY SCHOOL

16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

UTILITY PLAN - ALTERNATE #1

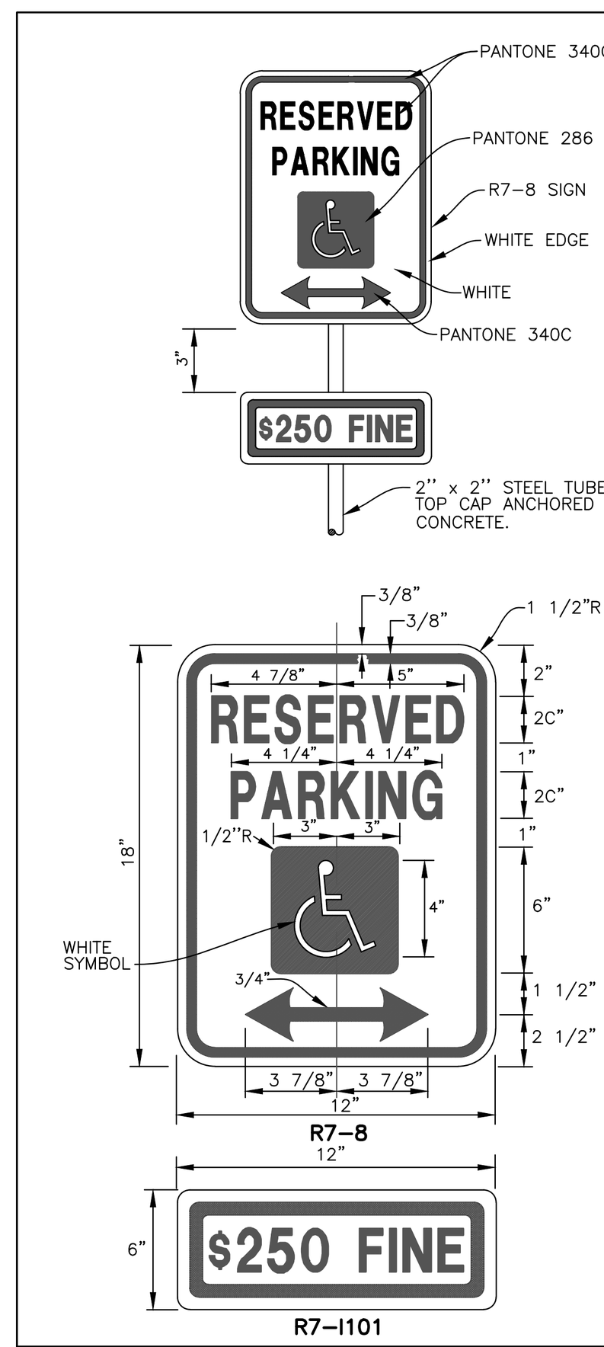
TRIA ARCHITECTURE

C8.00.1



NOTE:
1. HANDICAPPED STALL AND SYMBOL STRIPING TO BE PER JURISDICTION GOVERNMENT AGENCY STANDARDS.
2. STANDARD PARKING STALL STRIPING TO BE TWO COATS YELLOW PAINT UNLESS OTHERWISE NOTED.

06-01-15
TYPICAL 45° PARKING STRIPING DETAIL
S-MS-60PARKING



NOTE:
ACCESSIBLE PARKING SIGNS SHALL BE VERTICALLY MOUNTED ON A POST OR WALL AT A MINIMUM OF 5 FEET AND A MAXIMUM OF 9 FEET ABOVE FINISHED GRADE, AND THEY SHALL BE LOCATED IN THE CENTER OF PARKING STALLS NO MORE THAN 6' FROM FRONT OF SPACE.

NOTES:
1. THE ARROW SHOULD BE OMITTED WHERE THERE IS ONLY ONE SPACE. THE ARROW MAY ALSO BE MADE TO POINT IN ONLY ONE DIRECTION.
2. FINE AMOUNT TO BE IN ACCORDANCE WITH MUNICIPAL REQUIREMENTS.

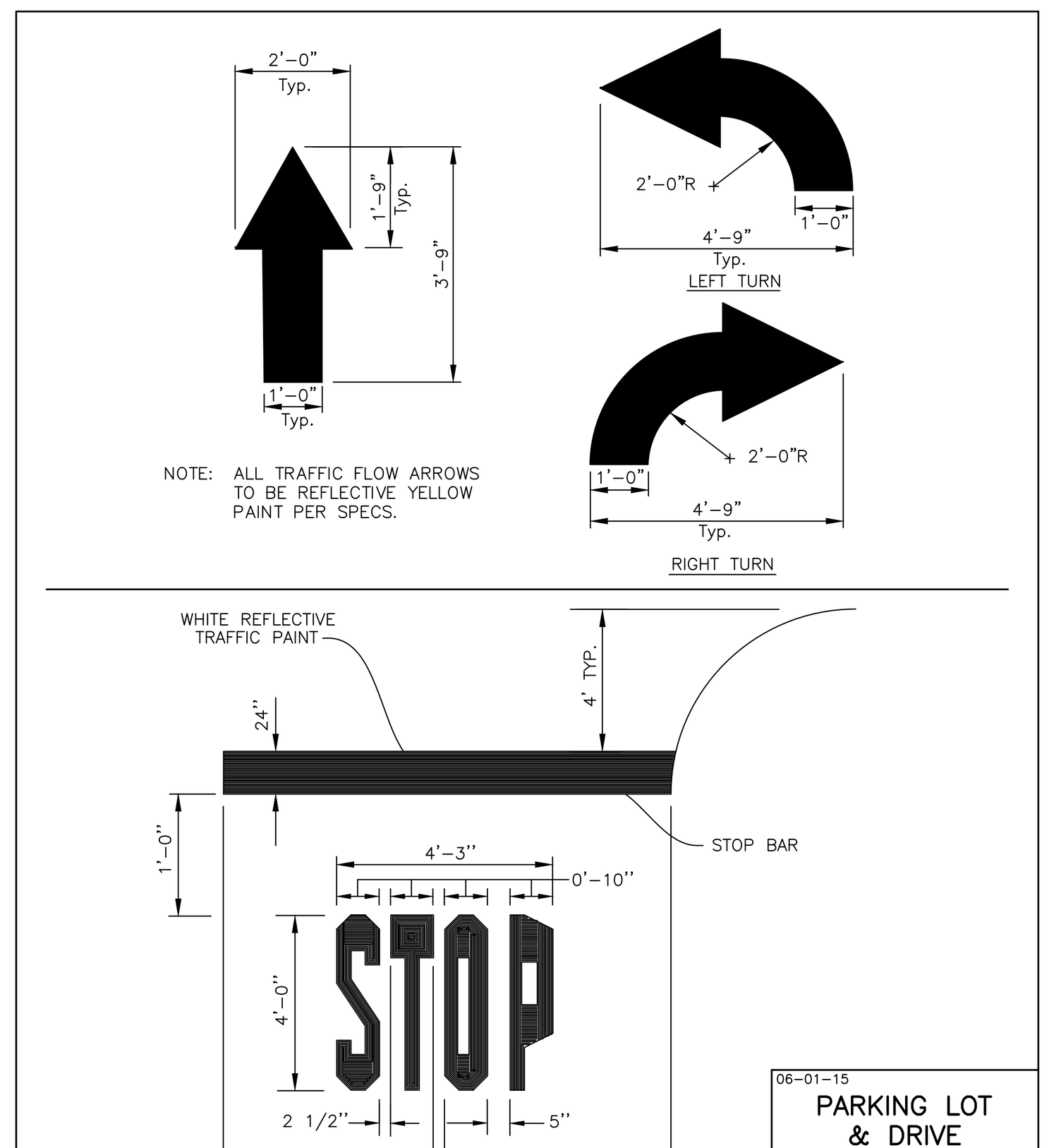
06-01-15
ILLINOIS R7-8 HANDICAPPED SIGN DETAIL
S-MS-HANDICAP-SIGN

MATERIAL STANDARDS

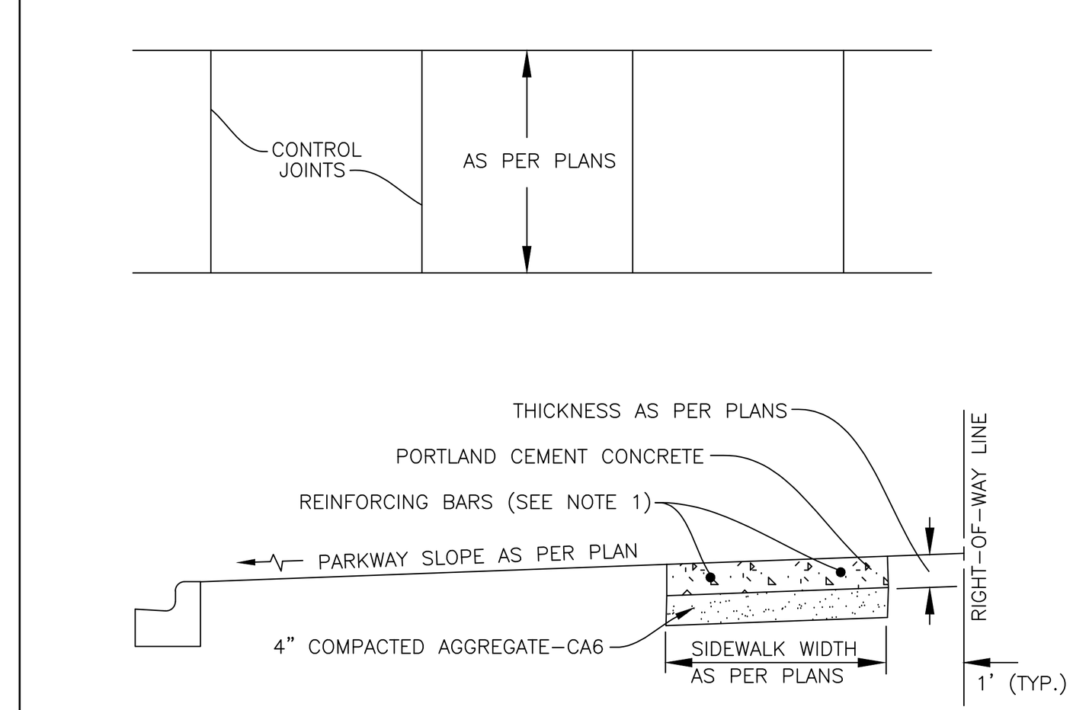
ITEM	BRAND	PRODUCT
FIRE HYDRANTS (TRAFFIC MODEL)	EAST JORDAN	WATERMASTER 5BR250 SAFETY YELLOW
GATE VALVES SPECIFY SIZE NON-RISING STEM, 2'' NUT, M.J., OPEN LEFT	EAST JORDAN (≤12 IN.) EAST JORDAN (≥14 IN.)	FLOWMASTER RW CLASS 150 B
MANHOLES/CATCHBASINS/INLETS IN OPEN AREAS AND PAVEMENT (SELF-SEALING LID WITH PROPER UTILITY MARKINGS)	EAST JORDAN IRON WORKS	
	CLOSED LID	1022Z3
	OPEN LID *1 SWALES AND DITCHES	1051Z3 W/ 1020M1 6527
MANHOLES/CATCH BASINS/INLETS IN COMBINATION CURB & GUTTER (BICYCLE SAFE)	EAST JORDAN IRON WORKS ROLL/MOUNTABLE CURB B6.12 CURB	7525Z W/ 7525M

*1 WHEREVER STORMWATER COULD POSSIBLY ENTER STORM STRUCTURE

06-01-15
MATERIAL STANDARDS
S-MS-MATERIALSTNDS

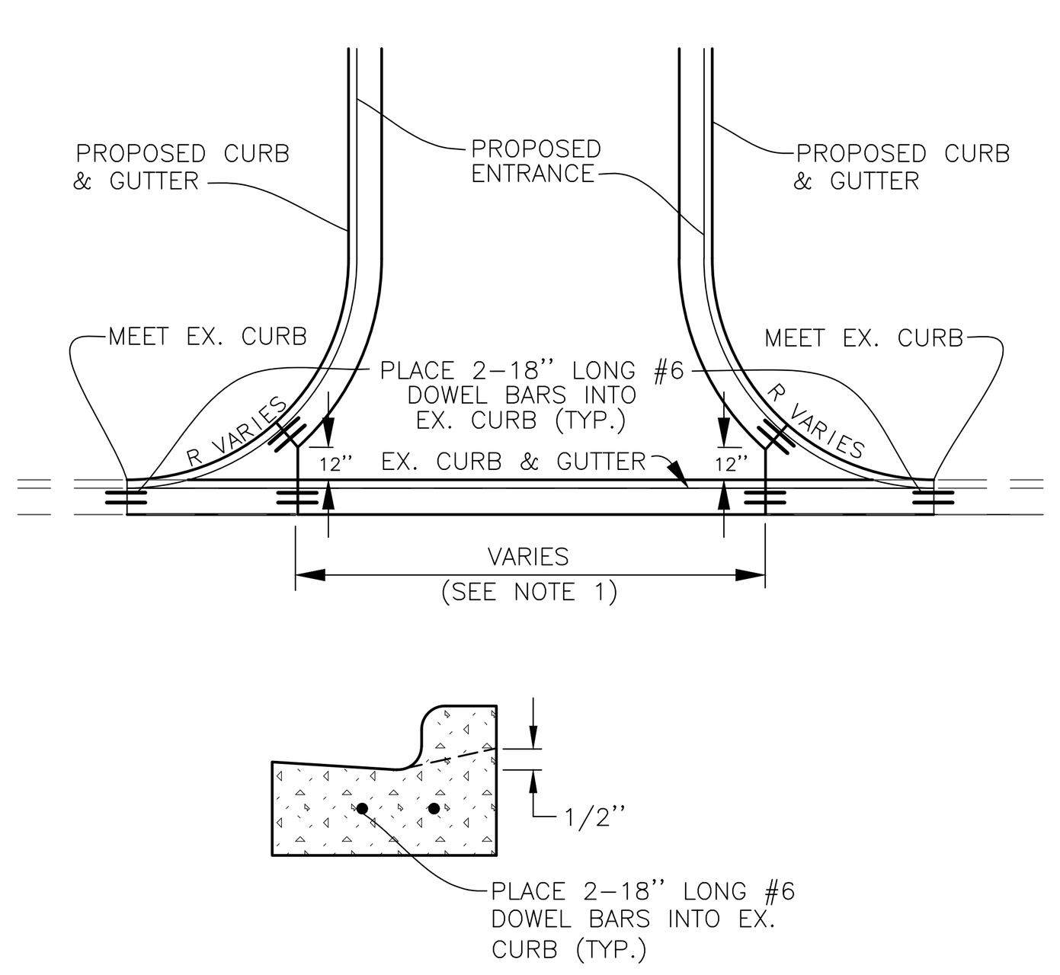


06-01-15
PARKING LOT & DRIVE PAVEMENT MARKING DETAIL
S-MS-PAVMARKING



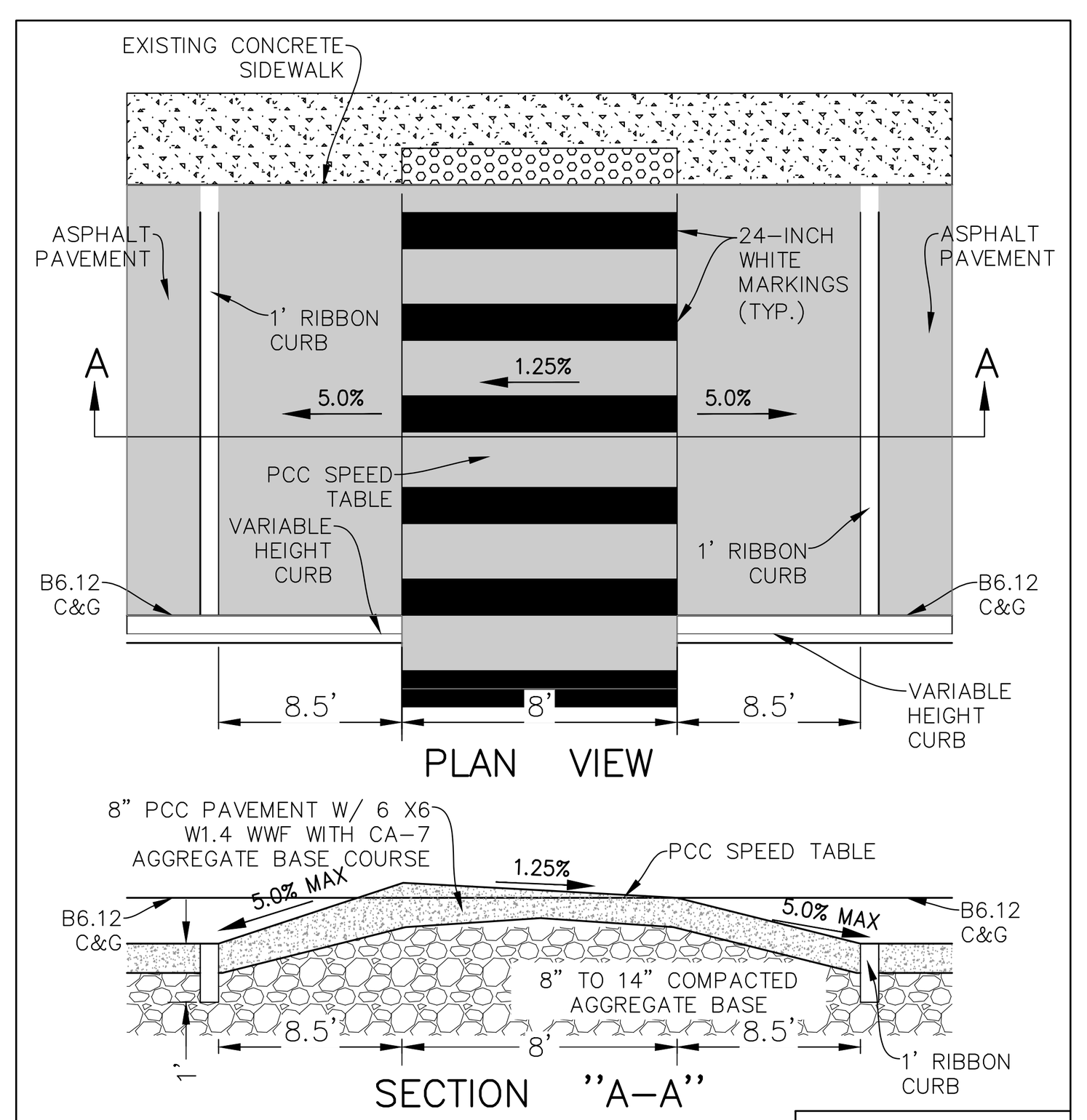
NOTES:
1. AT ALL TRENCH CROSSINGS, 2-#4 REFORMED REINFORCING BARS (10' LONG) SHALL BE PLACED OVER THE TRENCH.
2. CONCRETE THICKNESS SHALL BE 6'' ACROSS DRIVEWAYS AND TRENCH CROSSINGS.
3. 3/4'' EXPANSION JOINTS SHALL BE CONSTRUCTED AT A MAXIMUM SPACING OF 50'.
4. CONTROL JOINTS SHALL BE SPACED THE SAME AS THE SIDEWALK WIDTH AND 1/4'' IN DEPTH.
5. CROSS SLOPE ON SIDEWALK SHALL NOT EXCEED 2.00%

04-20-21
SIDEWALK DETAIL
S-RD-SIDEWALK

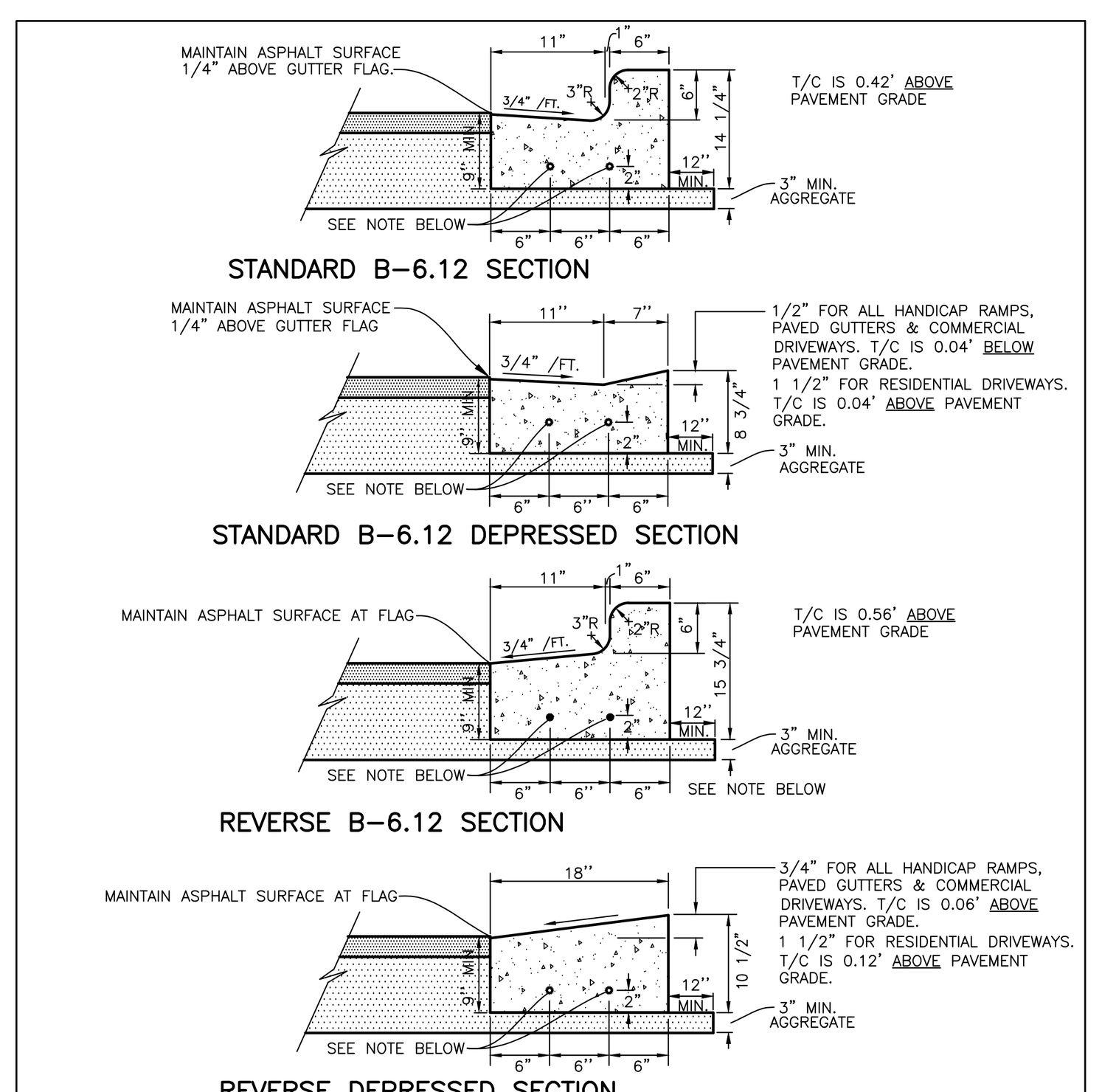


NOTE:
THE CONTRACTOR SHALL SAWCUT, REMOVE AND REPLACE THE EXISTING CURB AND GUTTER WITH A DEPRESSED CURB AND GUTTER SECTION AND SHALL REMOVE THE EXISTING PAVEMENT AS NEEDED SO AT TO PROVIDE A SMOOTH TRANSITION.

06-01-15
COMMERCIAL DRIVEWAY ENTRANCE DETAIL
S-RD-COMM-DR-ENTRANCE

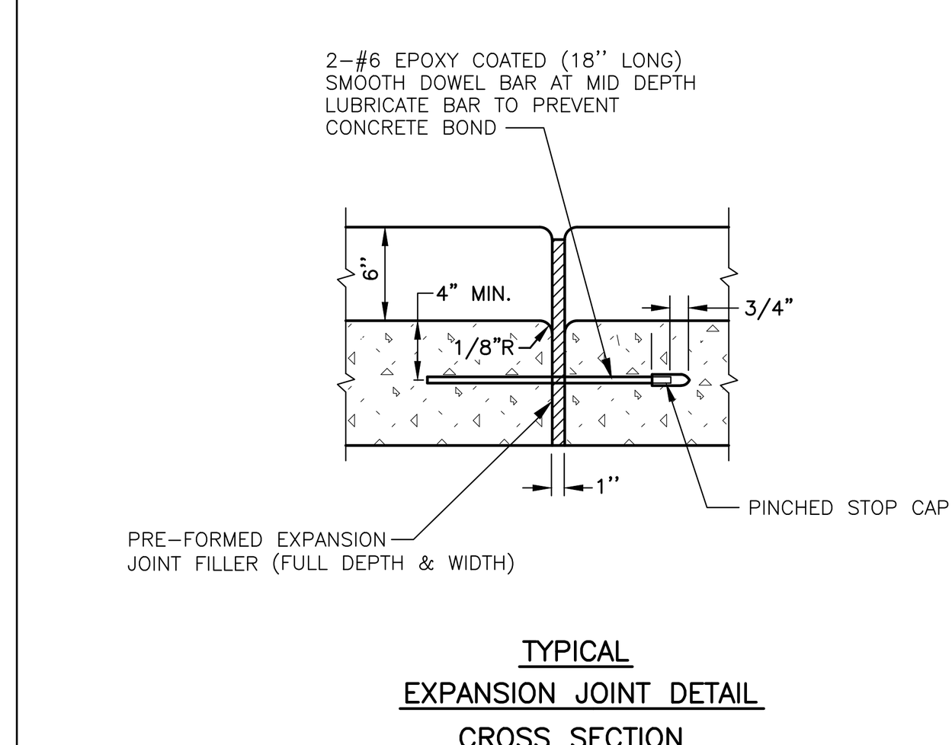


06-01-15
TYPICAL SPEED TABLE DETAIL
S-RD-VG



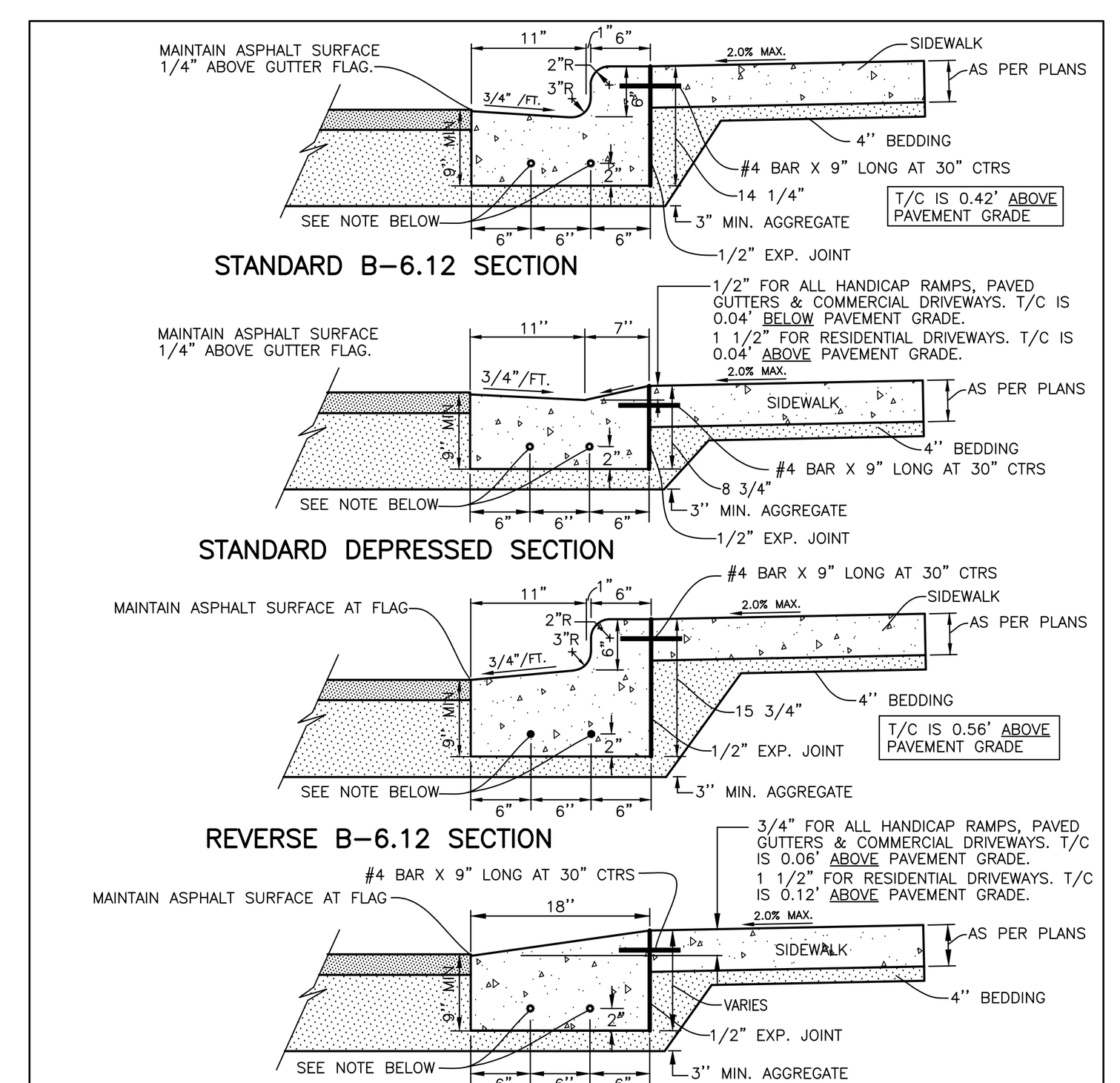
NOTE:
1. EXPANSION JOINTS TO BE LOCATED AT HIGH POINTS, UTILITY STRUCTURES, CURB RETURNS, COLD JOINTS OR 60' MAX. (SEE DETAIL)
2. CONTRACTION JOINTS ARE TO BE SAW CUT 2" DEEP AT 20' INTERVALS MAX.
3. INSTALL 2-#4 DEFORMED BARS X 10'-0" LONG OVER ALL TRENCHES.
4. TRANSITION CURB AND GUTTER AS NECESSARY TO MEET DRAINAGE STRUCTURE FRAME AND GRATE

06-01-17
MODIFIED B-6.12 CURB & GUTTER DETAIL
S-RD-B612-CURB
SHEET 1 OF 2



TYPICAL EXPANSION JOINT DETAIL CROSS SECTION

06-01-17
CURB EXPANSION JOINT
S-RD-EXPANSION-JOINT
SHEET 2 OF 2



NOTES:
1. EXPANSION JOINTS TO BE LOCATED AT HIGH POINTS, UTILITY STRUCTURES, CURB RETURNS, COLD JOINTS OR 50' MAX. (SEE DETAIL)
2. CONTRACTION JOINTS ARE TO BE SAW CUT 2" DEEP AT 20' INTERVALS MAX. ALONG CURB, 5' INTERVALS MAX. FOR SIDEWALK.
3. INSTALL 2-#4 DEFORMED BARS X 10'-0" LONG OVER ALL TRENCHES.
4. TRANSITION CURB AND GUTTER AS NECESSARY TO MEET DRAINAGE STRUCTURE FRAME AND GRATE
5. IF CURB & GUTTER & SIDEWALK ARE POURED MONOLITHICALLY, NO #4x9" LONG REINFORCING BARS ARE REQUIRED.

06-01-17
MODIFIED B-6.12 CURB & GUTTER W/ADJACENT SIDEWALK DETAIL
S-RD-B612-CURB-SW

SHOULD A CONFLICT ARISE BETWEEN MANHARD DETAILS AND THE VILLAGE DETAILS, THE VILLAGE DETAILS SHALL TAKE PRECEDENCE.

TRIA ARCHITECTURE

CIVIL/LANSCAPE CONSULTANT:
Manhard CONSULTING
One Overlook Point, Suite 290
Lincolnshire, IL 60069
(P) (847) 634-5550

STRUCTURAL CONSULTANT:
Larson Engineering, Inc.
1488 BOND STREET, SUITE 100
NAPERVILLE, ILLINOIS 60563-6503
ILLINOIS LICENSE NO 184-001442
LEI COMM. NO 21160576.000
(P) 630.357.0540
(F) 630.357.0164

M.E.P./F.P. CONSULTANT:
OAS O'Higgins & Arnold Sustainability, LLC
769 HEARTLAND DR., UNIT A SUGAR GROVE, ILLINOIS 60554

KIRBY SCHOOL DISTRICT 140
2023 NEW FERNWAY PARK ELEMENTARY SCHOOL
16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

PROJECT NUMBER: 21-054.1
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DRAWN BY:
ISSUED FOR BID:
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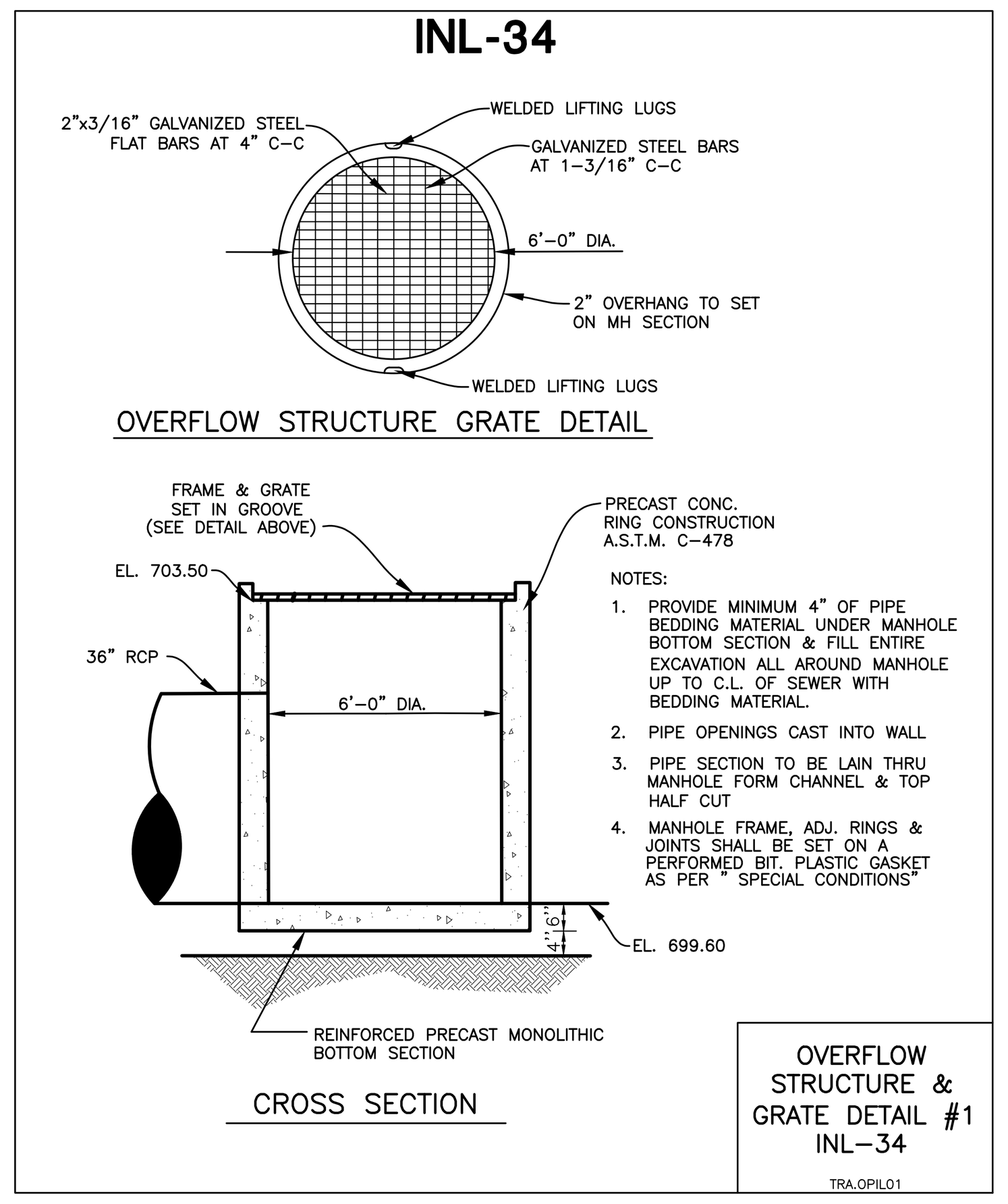
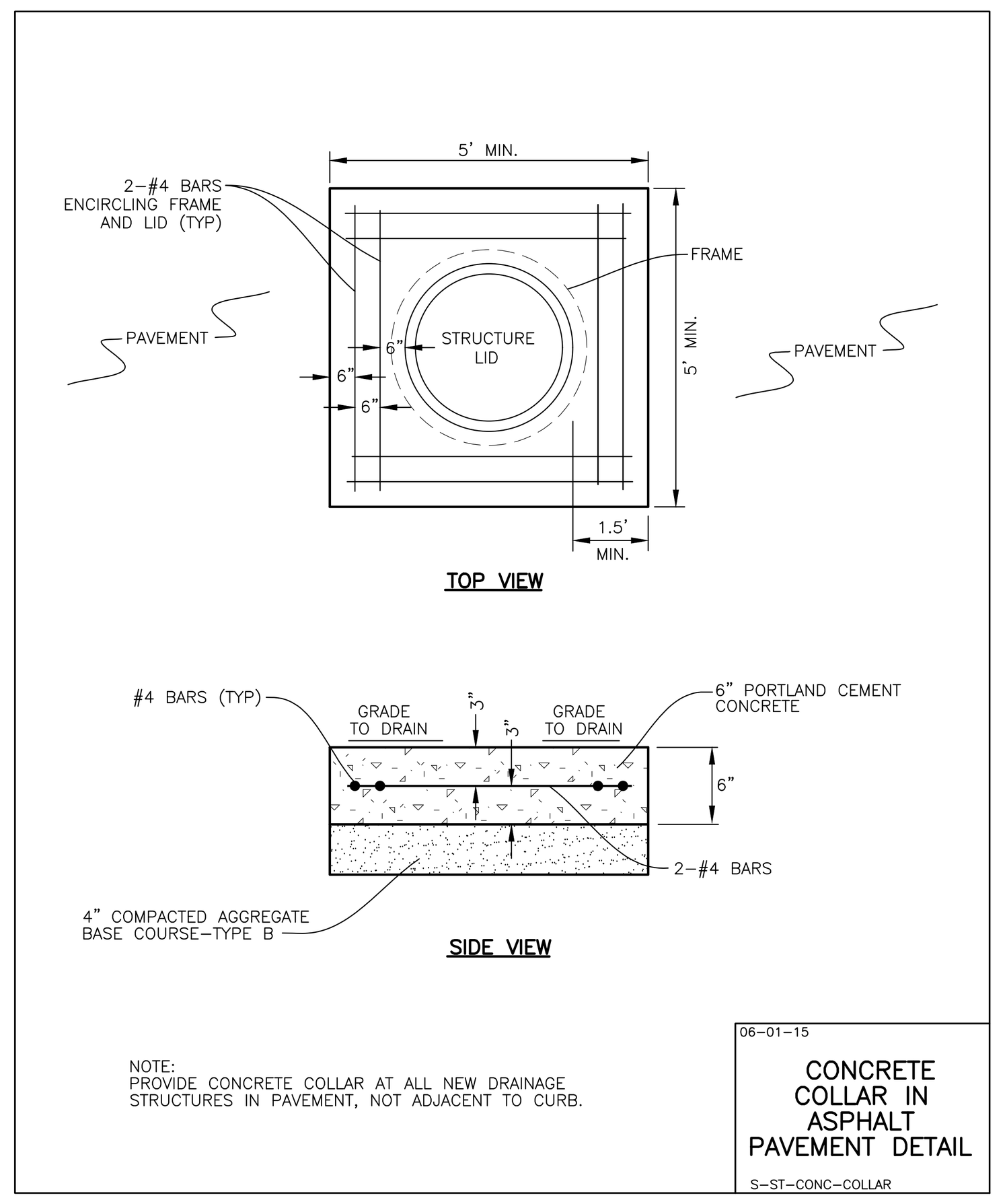
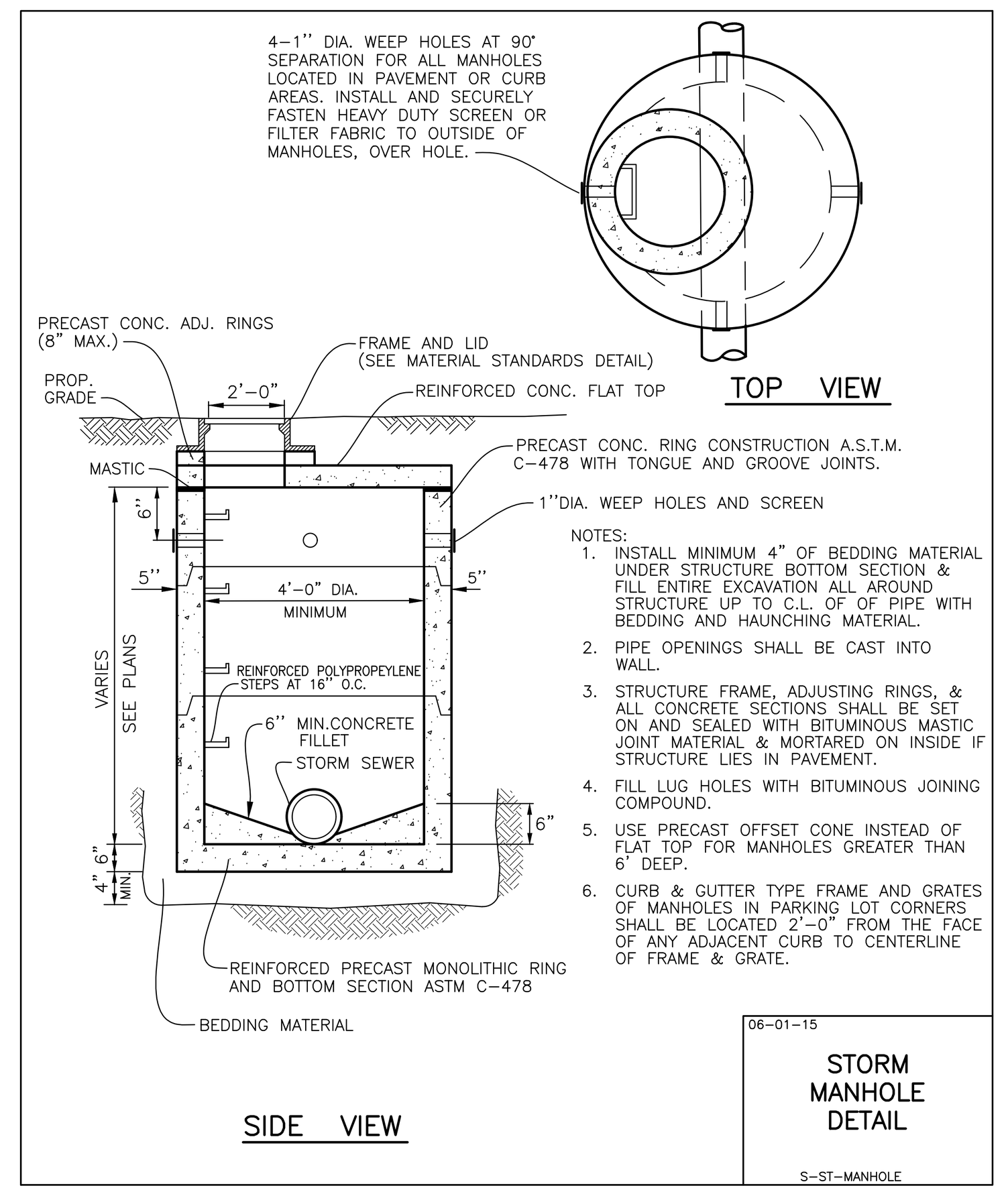
REVISIONS: 1 2 3 4 5

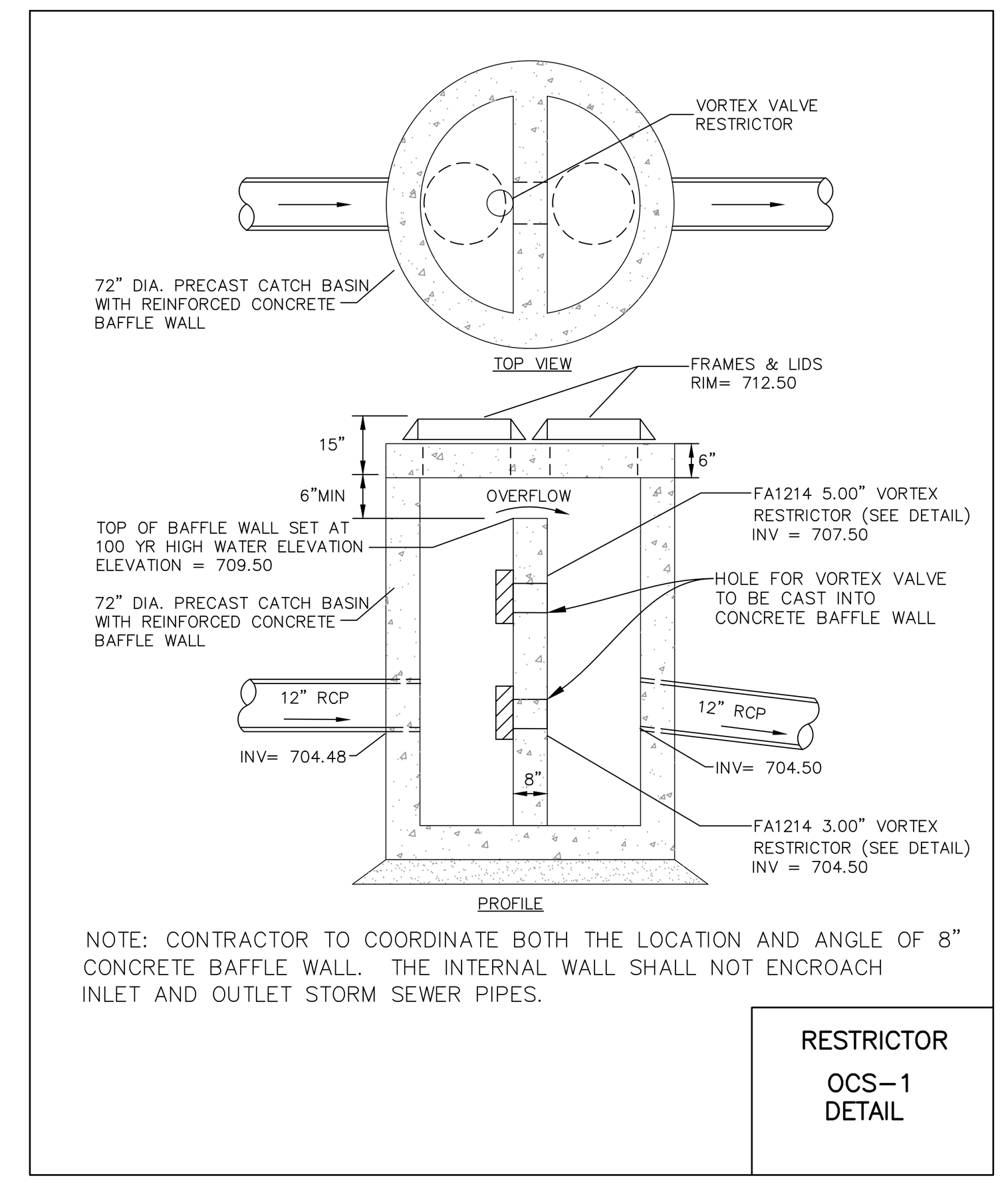
CONSTRUCTION DETAILS

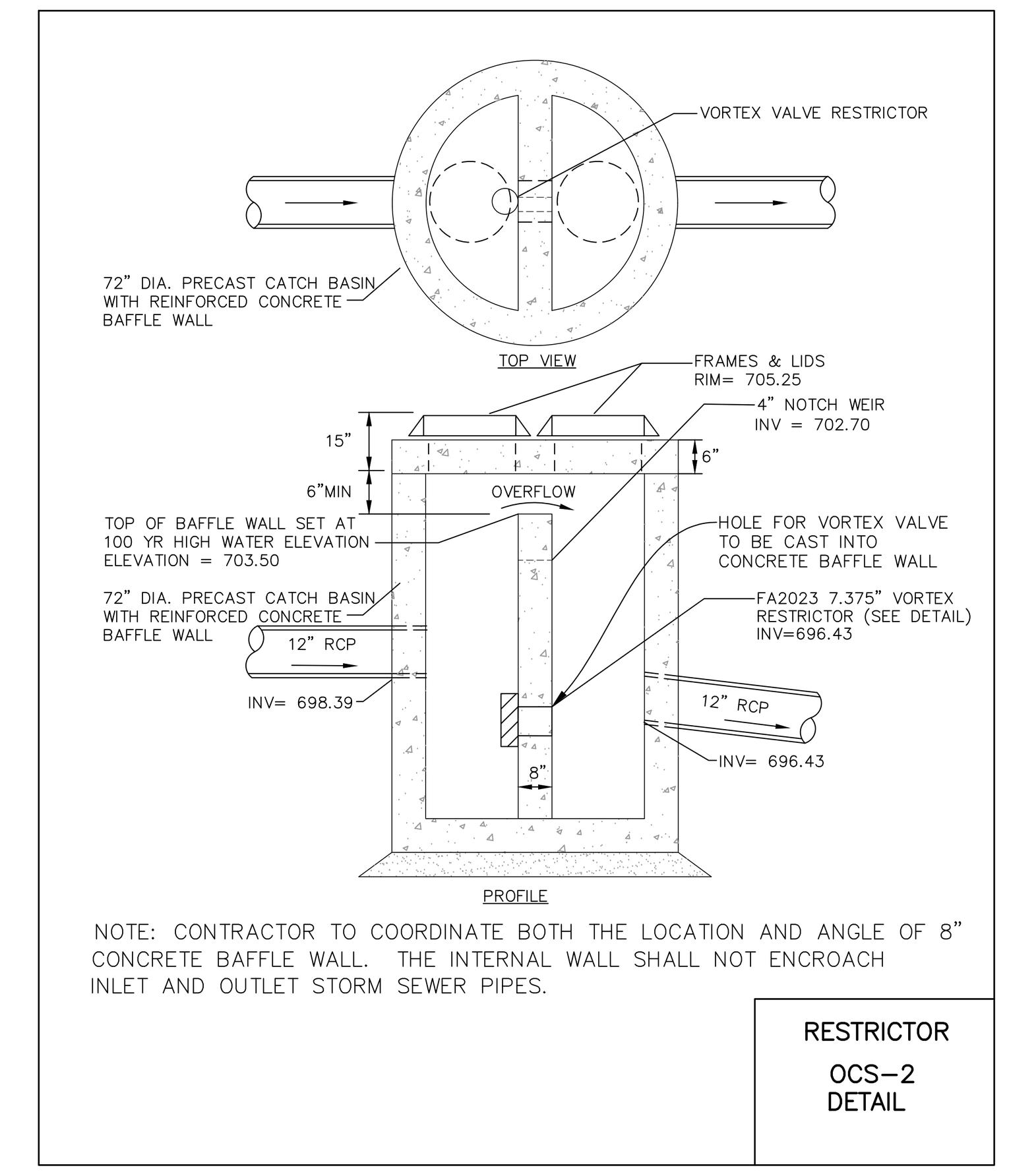
C9.00

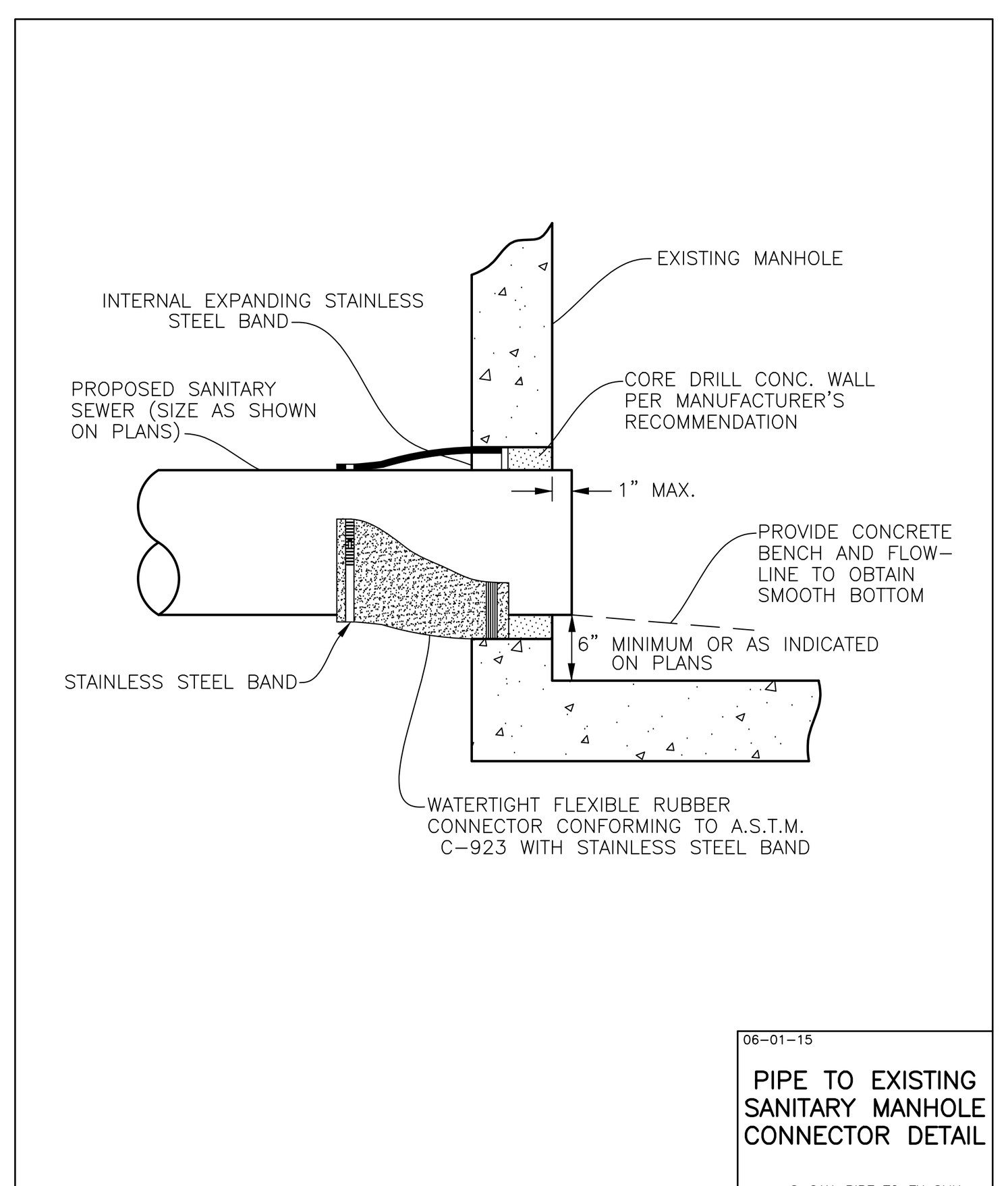


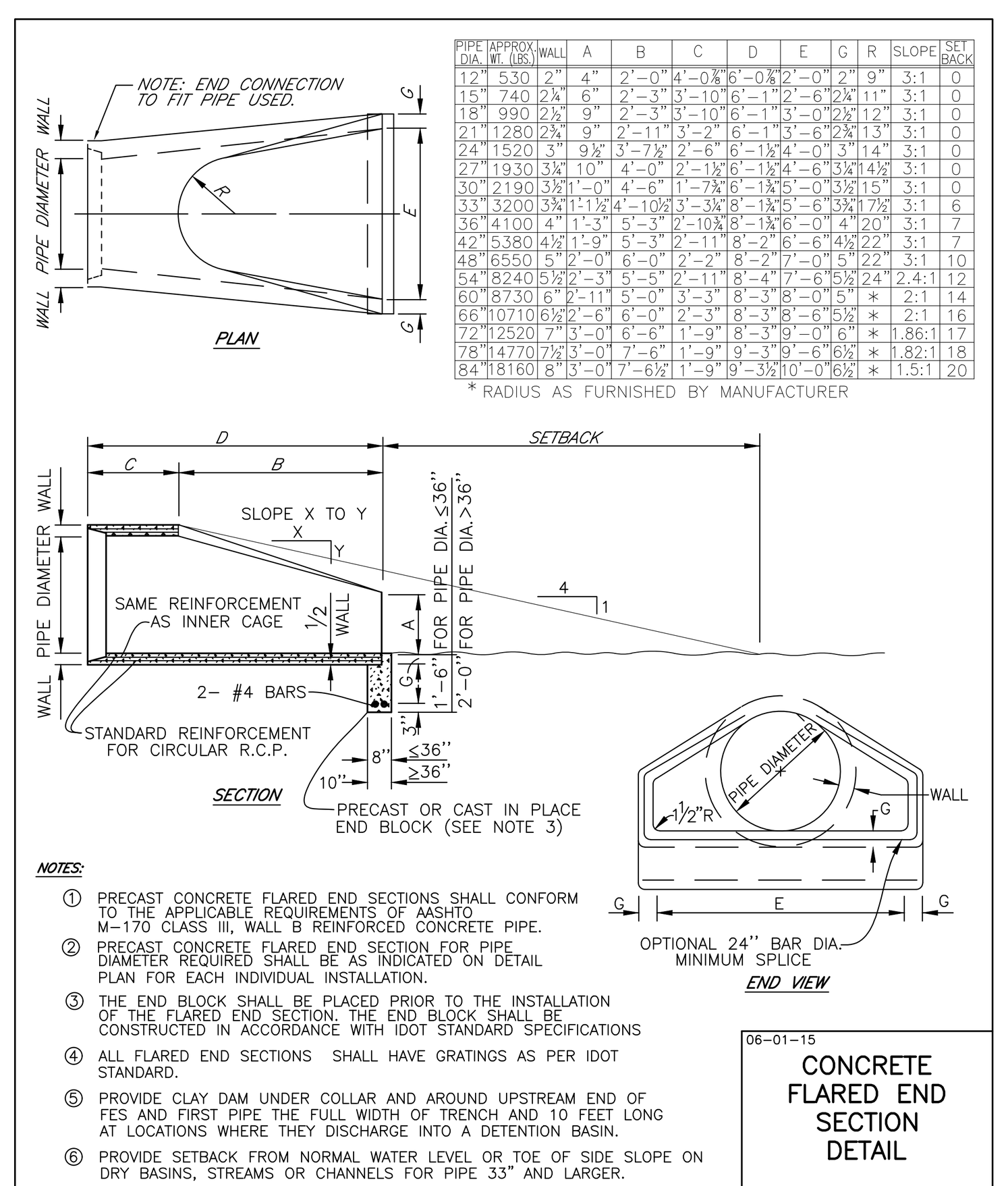


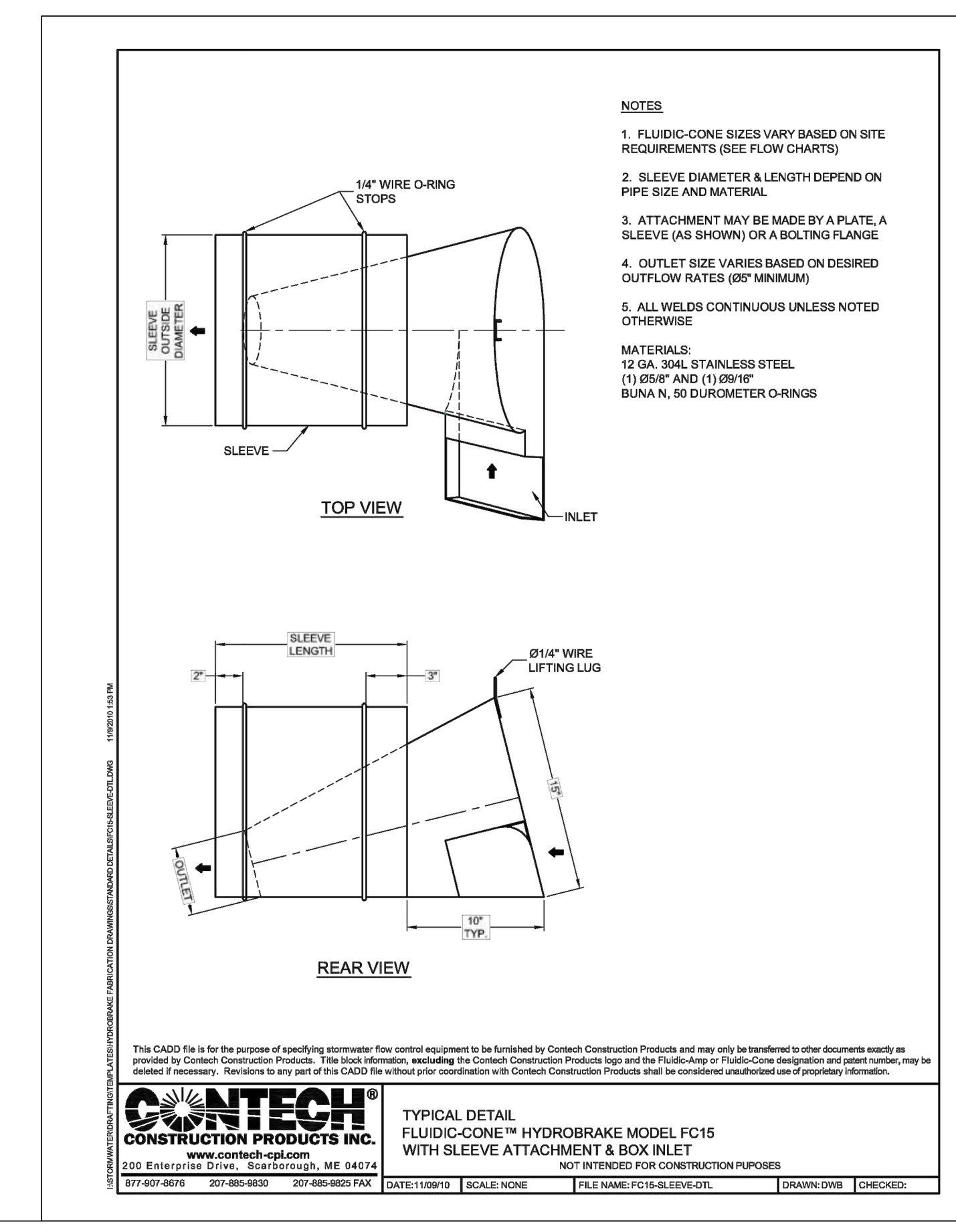


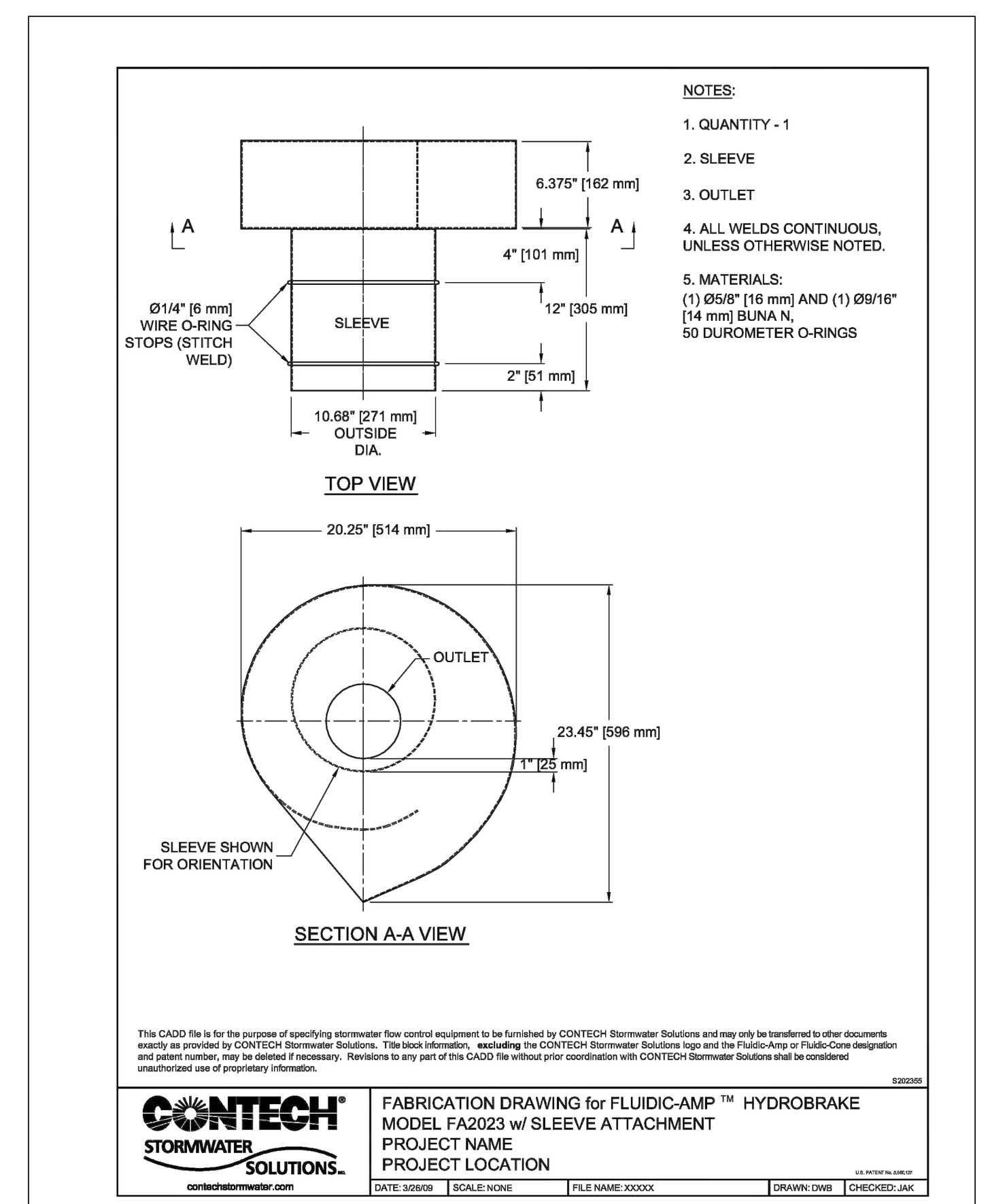


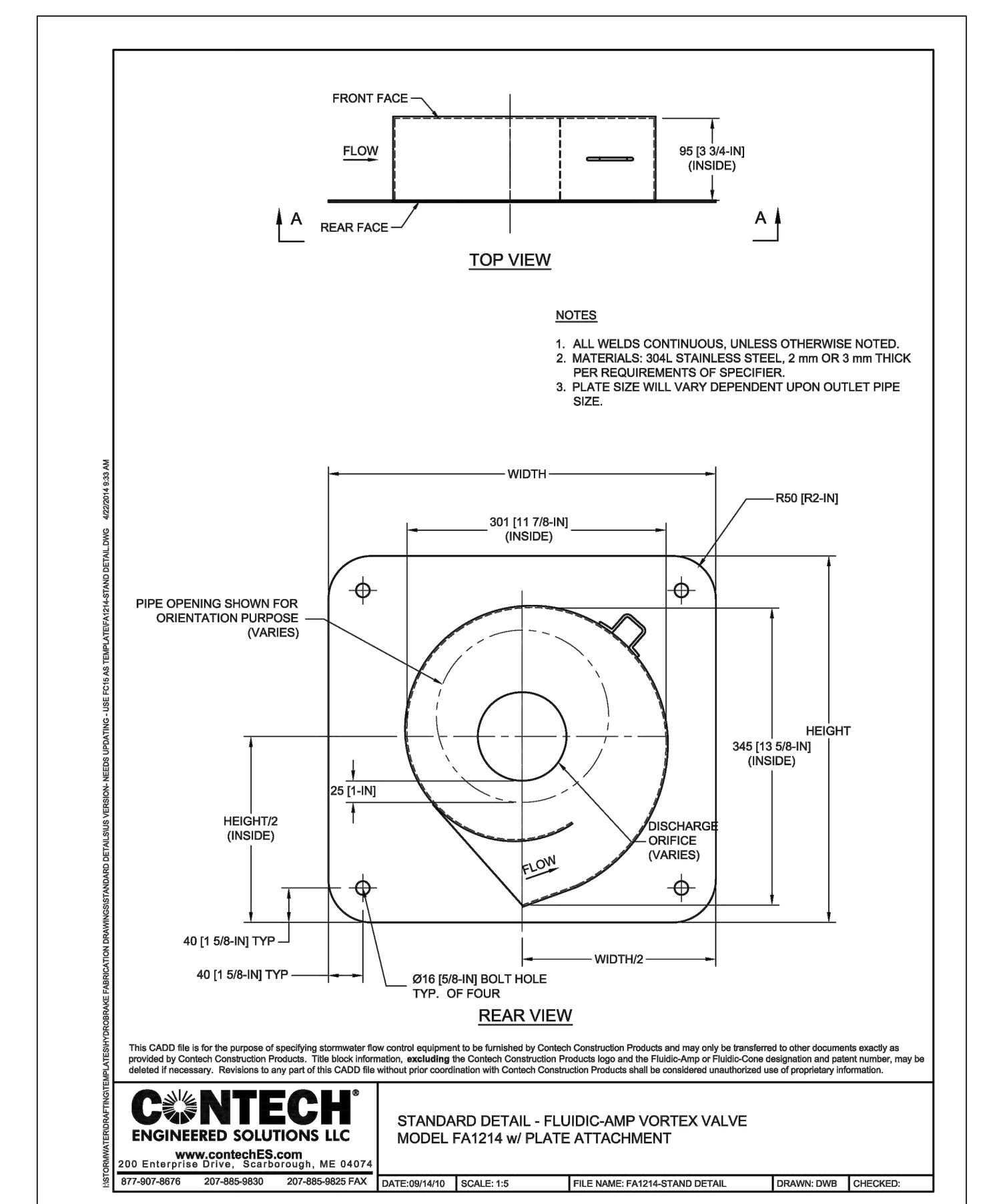








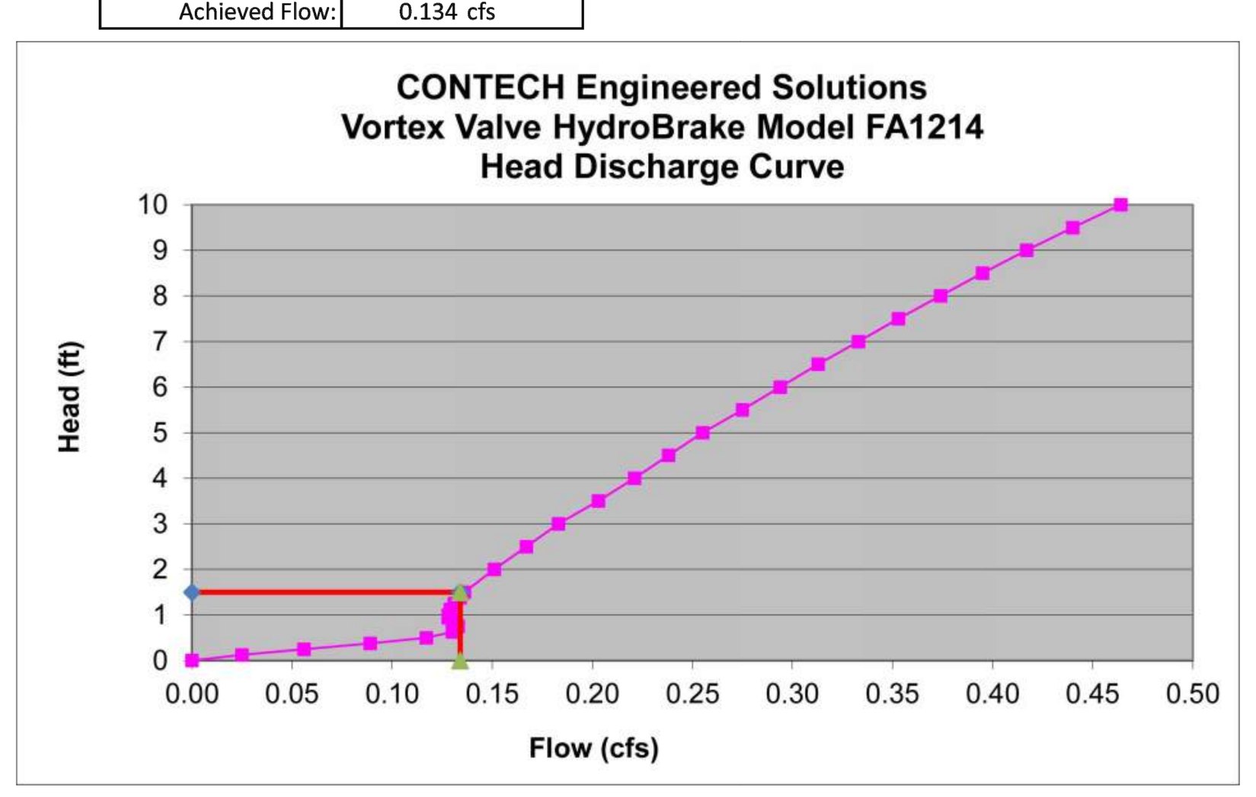




Vortex Valve FA1214 with 3" Opening

Head (ft)	Flow (cfs)
0	0
0.125	0.025
0.250	0.056
0.375	0.089
0.500	0.117
0.625	0.130
0.750	0.133
0.875	0.130
0.938	0.128
1.00	0.128
1.125	0.129
1.25	0.131
1.375	0.134
1.50	0.136
2.00	0.151
2.50	0.167
3.00	0.183
3.50	0.203
4.00	0.221
4.50	0.238
5.00	0.255
5.50	0.275
6.00	0.294
6.50	0.313
7.00	0.333
7.50	0.353
8.00	0.374
8.50	0.395
9.00	0.417
9.50	0.440
10.00	0.464

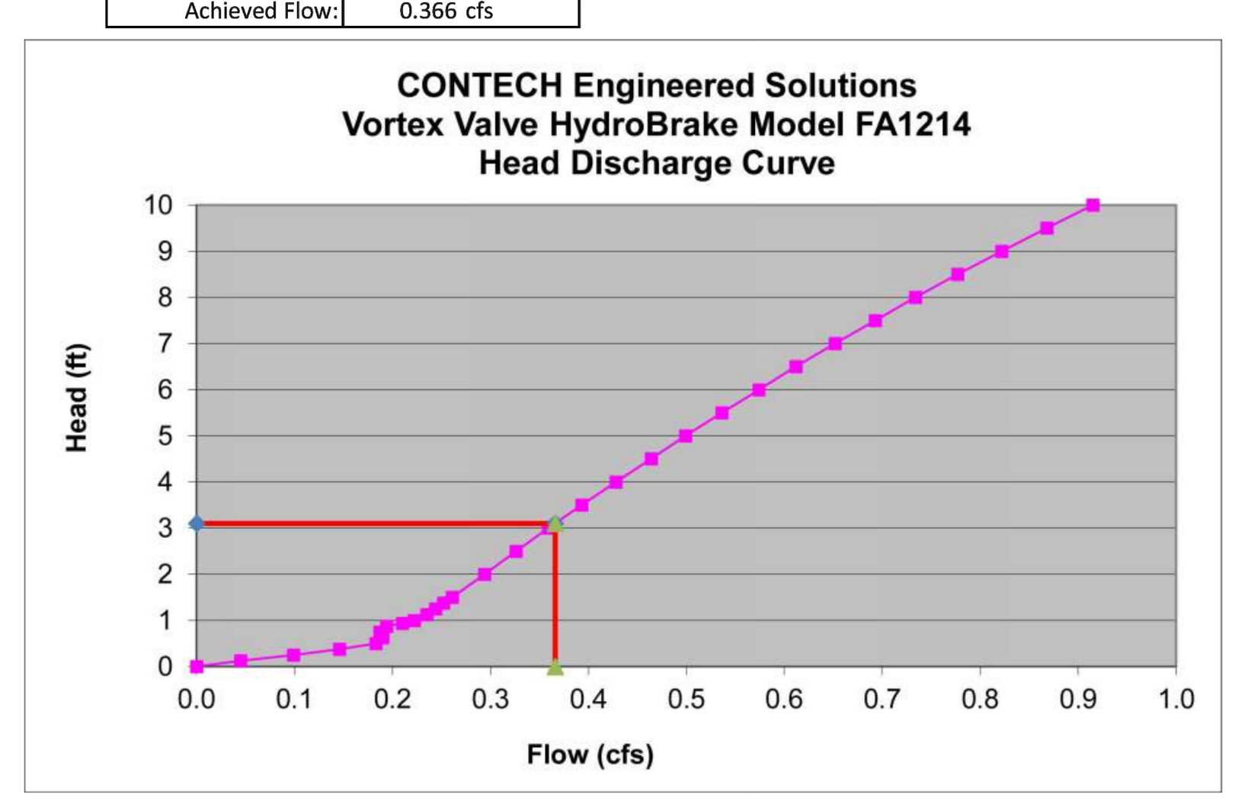
Target Head:	1.5 ft
Target Flow:	0.14 cfs
Achieved Flow:	0.134 cfs



Vortex Valve FA1214 with 5" Opening

Head (ft)	Flow (cfs)
0	0
0.125	0.045
0.25	0.099
0.375	0.146
0.50	0.183
0.625	0.190
0.75	0.187
0.875	0.194
0.938	0.210
1.00	0.222
1.125	0.235
1.25	0.244
1.375	0.252
1.50	0.261
2.00	0.294
2.50	0.326
3.00	0.359
3.50	0.393
4.00	0.428
4.50	0.464
5.00	0.499
5.50	0.536
6.00	0.574
6.50	0.612
7.00	0.652
7.50	0.693
8.00	0.734
8.50	0.777
9.00	0.822
9.50	0.868
10.00	0.915

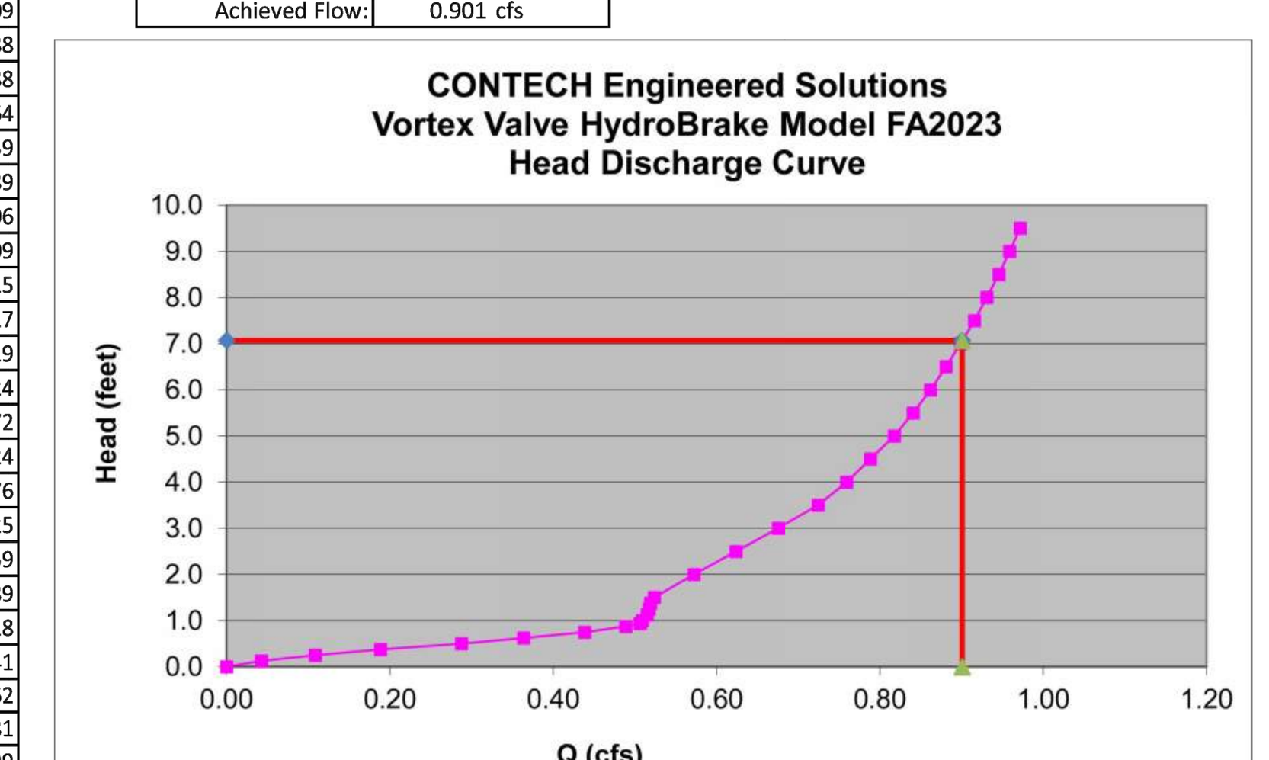
Target Head:	3.1 ft
Target Flow:	0.37 cfs
Achieved Flow:	0.366 cfs



Vortex Valve FA2023 with 7.375" Opening

Head (ft)	Flow (cfs)
0	0
0.125	0.043
0.25	0.109
0.375	0.188
0.5	0.288
0.625	0.364
0.75	0.439
0.875	0.489
0.9375	0.506
1	0.509
1.125	0.515
1.25	0.517
1.375	0.519
1.5	0.524
2	0.572
2.5	0.624
3	0.676
3.5	0.725
4	0.759
4.5	0.789
5	0.818
5.5	0.841
6	0.862
6.5	0.881
7	0.899
7.5	0.916
8	0.931
8.5	0.946
9	0.959
9.5	0.972
10	0.985

Target Head:	7.07 ft
Target Flow:	0.9075 cfs
Achieved Flow:	0.901 cfs



SHOULD A CONFLICT ARISE BETWEEN MANHARD DETAILS AND THE VILLAGE DETAILS, THE VILLAGE DETAILS SHALL TAKE PRECEDENCE.

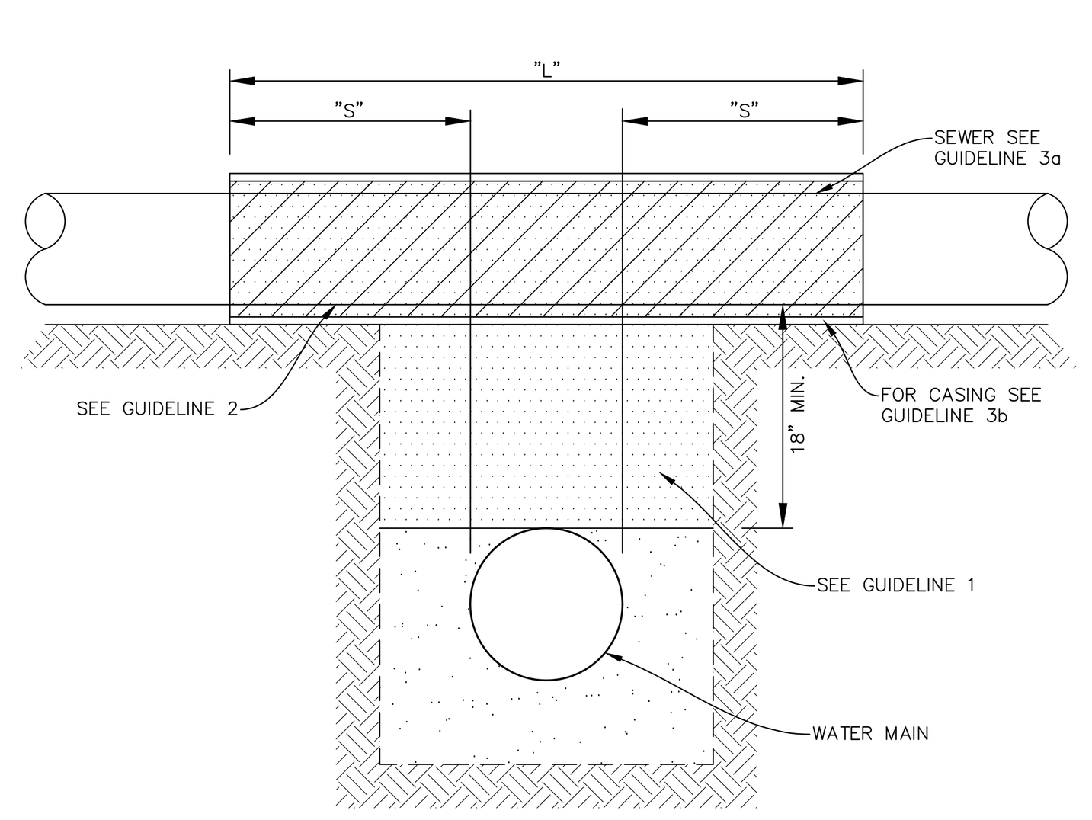
TRIA ARCHITECTURE

KIRBY SCHOOL DISTRICT 140
2023
NEW FERNWAY PARK ELEMENTARY SCHOOL
16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

CONSTRUCTION DETAILS

C10.00

SEWER LINE WITH 18" VERTICAL SEPARATION ABOVE WATER MAIN



NOTE: "S" = THE LENGTH NECESSARY TO PROVIDE 10 FEET OF SEPARATION AS MEASURED PERPENDICULAR TO THE EXISTING WATER MAIN.

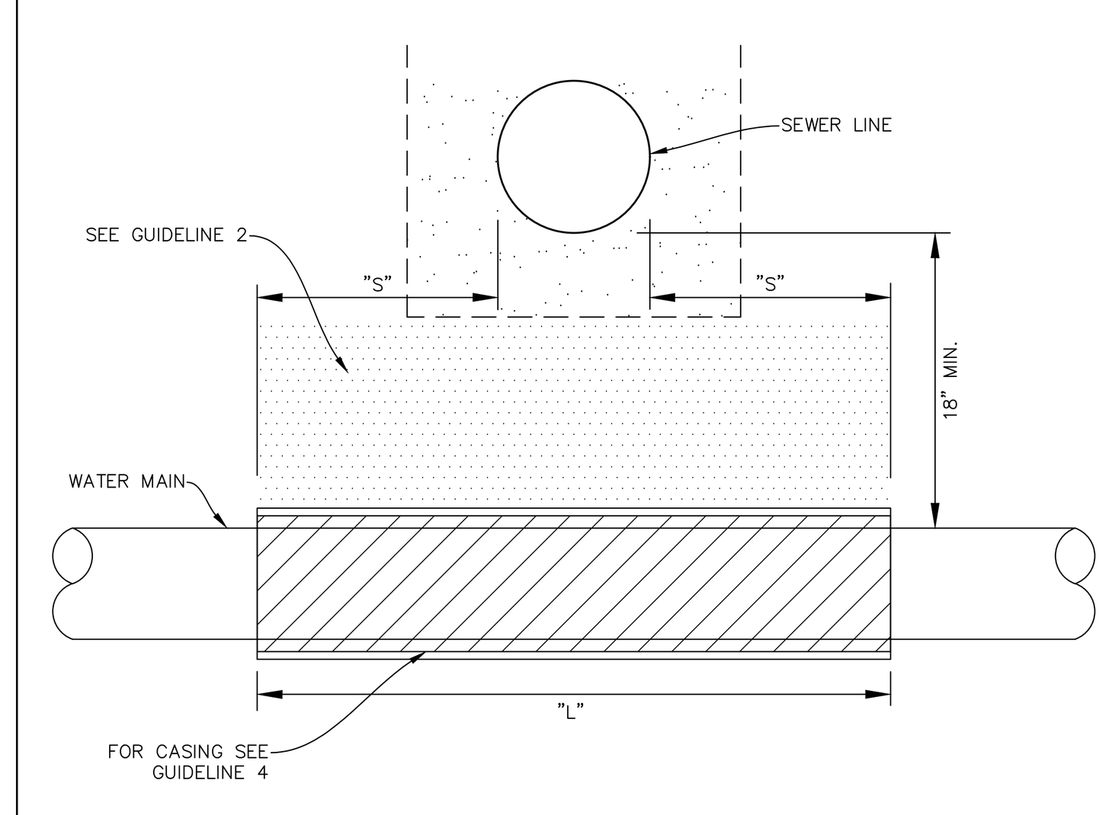
GUIDELINES:

1. IF SELECT GRANULAR BACKFILL EXISTS: REMOVE WITHIN WIDTH OF SEWER TRENCH AND REPLACE WITH SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT.
2. OMIT SELECT GRANULAR EMBEDMENT AND GRANULAR BACKFILL TO ONE (1) FOOT OVER TOP OF SEWER AND USE SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT THE LENGTH OF "L" FEET.
3. (a) CONSTRUCT "L" FEET OF SEWER OF WATER MAIN MATERIAL AND PRESSURE TEST, OR:

   (b) USE "L" FEET OF WATER MAIN MATERIAL FOR CASING OF SEWER AND SEAL ENDS OF CASING.

06-01-15
WATER AND SEWER SEPARATION REQUIREMENTS (VERTICAL SEPARATION)
S-WM-SEP-VERTICAL-1

WATER MAIN BELOW SEWER LINE WITH 18" MINIMUM VERTICAL SEPARATION.



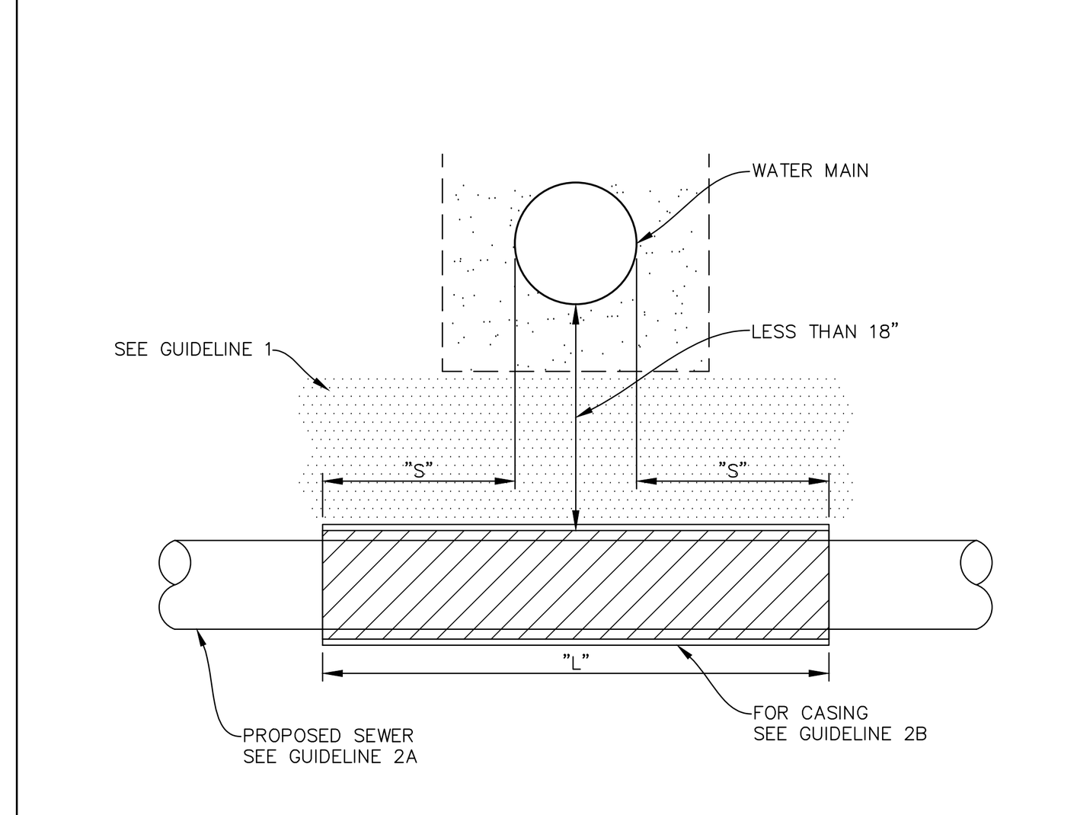
NOTE: "S" = THE LENGTH NECESSARY TO PROVIDE 10 FEET OF SEPARATION AS MEASURED PERPENDICULAR TO THE EXISTING SEWER LINE.

GUIDELINES:

1. OMIT SELECT GRANULAR EMBEDMENT AND GRANULAR BACKFILL TO ONE (1) FOOT OVER TOP OF WATER MAIN AND USE SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT THE LENGTH OF "L" FEET.
2. IF SELECT GRANULAR BACKFILL EXISTS, REMOVE WITHIN WIDTH OF SEWER LINE TRENCH AND REPLACE WITH SELECT SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT.
3. PROVIDE ADEQUATE SUPPORT FOR SEWER LINE TO PREVENT DAMAGE DUE TO SETTLEMENT.
4. USE "L" FEET OF WATER MAIN MATERIAL FOR CASING OF WATER MAIN AND SEAL ENDS OF CASING.

06-01-15
WATER AND SEWER SEPARATION REQUIREMENTS (VERTICAL SEPARATION)
S-WM-SEP-VERTICAL-2

SEWER LINE BELOW WATER MAIN WITH LESS THAN 18" VERTICAL SEPARATION.



NOTE: "S" = THE LENGTH NECESSARY TO PROVIDE 10 FEET OF SEPARATION AS MEASURED PERPENDICULAR TO THE EXISTING WATER MAIN.

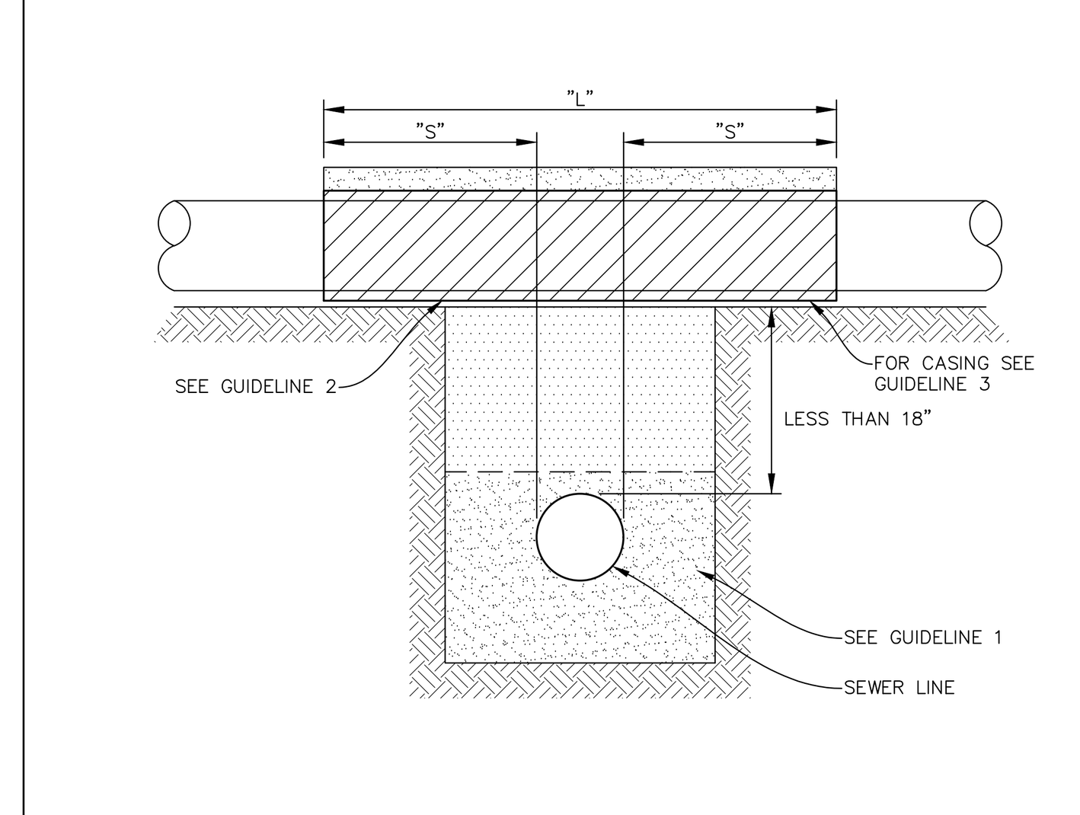
GUIDELINES:

1. OMIT SELECT GRANULAR EMBEDMENT AND GRANULAR BACKFILL TO ONE (1) FOOT OVER TOP OF SEWER AND USE SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT FOR "S" FEET ON EACH SIDE OD WATER MAIN.
2. a) CONSTRUCT "L" FEET OF PROPOSED SEWER OF WATER MAIN MATERIAL AND PRESSURE TEST, OR:

   b) USE "L" FEET OF WATER MAIN MATERIAL FOR CASING OF PROPOSED SEWER AND SEAL ENDS OF CASING.
3. PROVIDE ADEQUATE SUPPORT FOR EXCAVATING WATER MAIN TO PREVENT DAMAGE DUE TO SETTLEMENT OF SEWER TRENCH.

06-01-15
WATER AND SEWER SEPARATION REQUIREMENTS (VERTICAL SEPARATION)
S-WM-SEP-VERTICAL-3

WATER MAIN ABOVE SEWER LINE WITH LESS THAN 18" VERTICAL SEPARATION.



NOTE: "S" = THE LENGTH NECESSARY TO PROVIDE 10 FEET OF SEPARATION AS MEASURED PERPENDICULAR TO THE EXISTING SEWER LINE.

GUIDELINES:

1. OMIT SELECT GRANULAR EMBEDMENT AND GRANULAR BACKFILL TO ONE (1) FOOT OVER TOP OF WATER MAIN AND USE SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT THE LENGTH OF "L".
2. IF SELECT GRANULAR BACKFILL EXISTS, REMOVE WITHIN WIDTH OF EXISTING SEWER LINE TRENCH AND REPLACE WITH SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT.
3. USE "L" FEET OF WATER MAIN MATERIAL FOR CASING OF PROPOSED WATER MAIN AND SEAL ENDS OF CASING.
4. POINT LOADS SHALL NOT BE ALLOWED BETWEEN WATER MAIN CASING AND SEWER.

06-01-15
WATER AND SEWER SEPARATION REQUIREMENTS (VERTICAL SEPARATION)
S-WM-SEP-VERTICAL-4

STANDARD SPECIFICATIONS FOR WATER AND SEWER CONSTRUCTION IN ILLINOIS, LATEST EDITION.

41–2.01 PROTECTION OF WATER MAIN AND WATER SERVICE LINES

41–2.01A GENERAL

Water mains and water service lines shall be protected from sanitary sewers, storm sewers, combined sewers, house sewer service connections and drains as follows:

41–2.01B HORIZONTAL SEPARATION – WATER MAINS AND SEWERS

(1.) Water mains shall be located at least ten (10) feet (3.1 m) horizontally from any existing or proposed drain, storm sewer, sanitary sewer, combined sewer or sewer service connection.

(2.) Water mains may be located closer than ten (10) feet (3.1 m) to a sewer line when:

(a) local conditions prevent a lateral separation of ten (10) feet (3.1 m); and

(b) the water main invert is at least eighteen (18) inches (460 mm) above the crown of the sewer; and

(c) the water main is either in a separate trench or in the same trench on an undisturbed earth shelf located to one side of the sewer.

(3.) When it is impossible to meet (1) or (2) above, both the water main and drain or sewer shall be constructed of slip–on or mechanical joint cast or ductile iron pipe, prestressed concrete pipe, or PVC pipe equivalent to water main standards of construction. The drain or sewer shall be pressure tested to the maximum expected surcharge head before backfilling. See Standard Drawing No. 18.

02-01-19
WATER AND SEWER SEPARATION REQUIREMENTS (HORIZONTAL SEPARATION)
S-WM-SEP-HORIZONTAL

STANDARD SPECIFICATIONS FOR WATER AND SEWER CONSTRUCTION IN ILLINOIS, LATEST EDITION.

41–2.01C VERTICAL SEPARATION – WATER MAINS AND SEWERS

(1.) A water main shall be separated from a sewer so that its invert is a minimum of eighteen (18) inches (460mm) above the crown of the drain or sewer whenever water mains cross storm sewers, sanitary sewers or sewer service connections. The vertical separation shall be maintained for that portion of the water main located within ten (10) feet (3.1m) horizontally of any sewer or drain crossed. A length of water main pipe shall be centered over the sewer to be crossed with joints equidistant from the sewer or drain.

(2.) Both the water main and sewer shall be constructed of slip–on or mechanical joint cast or ductile iron pipe, prestressed concrete pipe, or PVC pipe equivalent to water main standards of construction when:

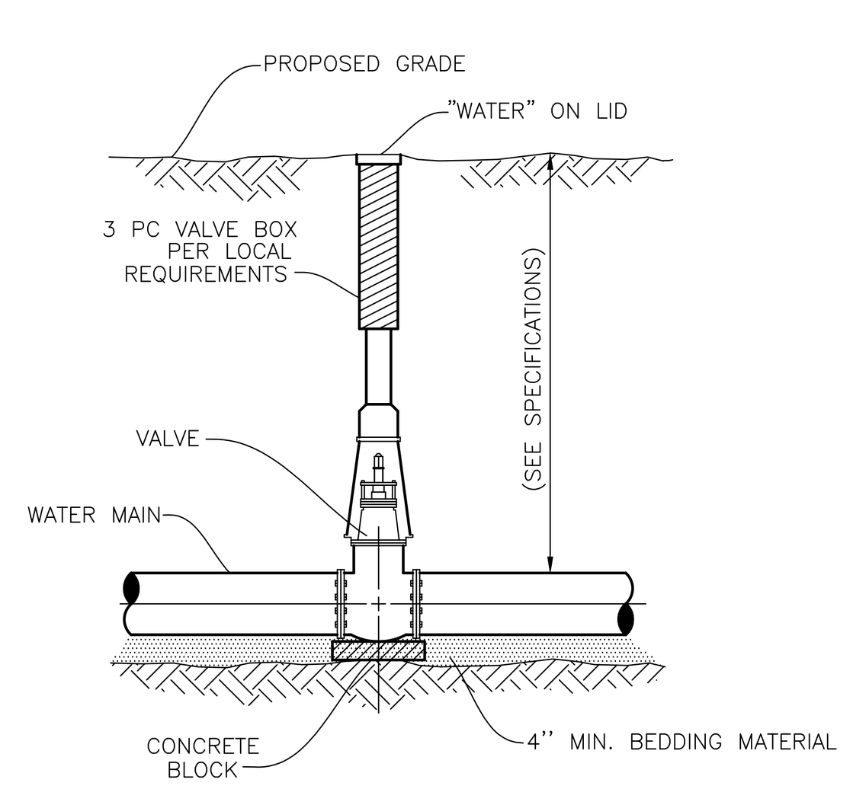
(a) it is impossible to obtain the proper vertical separation as described in (1) above; or

(b) the water main passes under a sewer or drain.

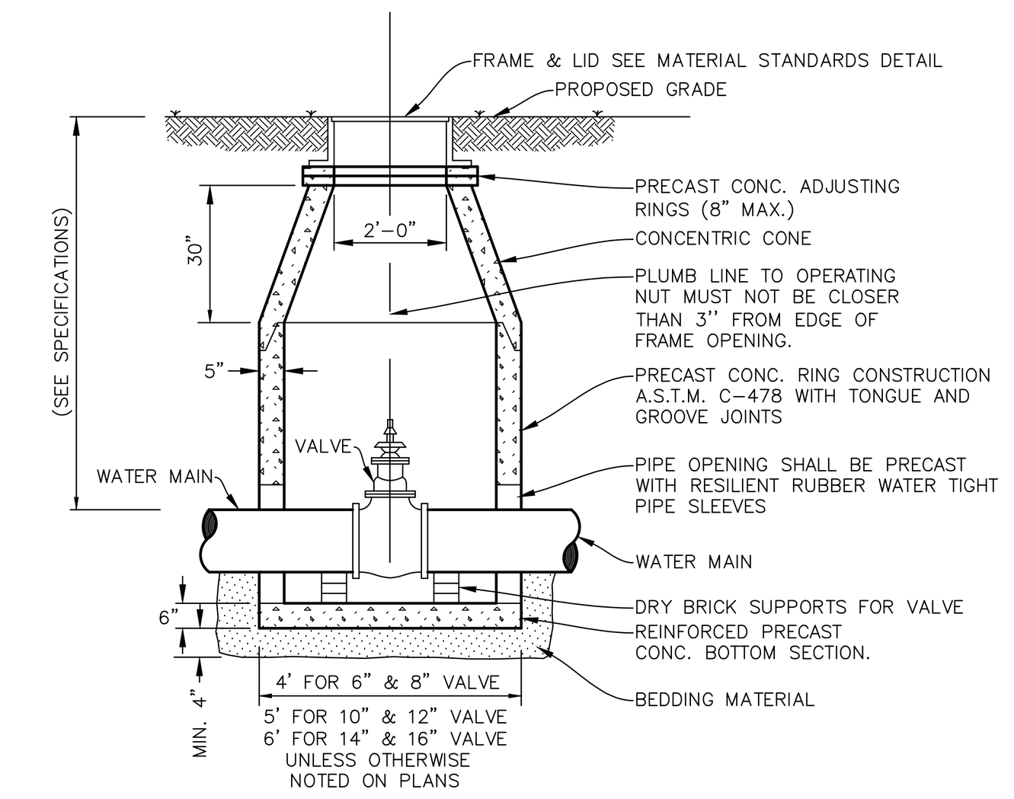
(3.) A vertical separation of eighteen (18) inches (460 mm) between the invert of the sewer or drain and the crown of the water main shall be maintained where a water main crosses under a sewer. Support the sewer or drain lines to prevent settling and breaking the main, as shown on the Plans or as approved by the ENGINEER.

(4.) Construction of water main quality pipe shall extend on each side of the crossing until the perpendicular distance from the water main to the sewer or drain line is at least ten (10) feet (3.1 m) See Standard Drawings No. 19–23.

02-01-19
WATER AND SEWER SEPARATION REQUIREMENTS (VERTICAL SEPARATION)
S-WM-SEP-VERTICAL



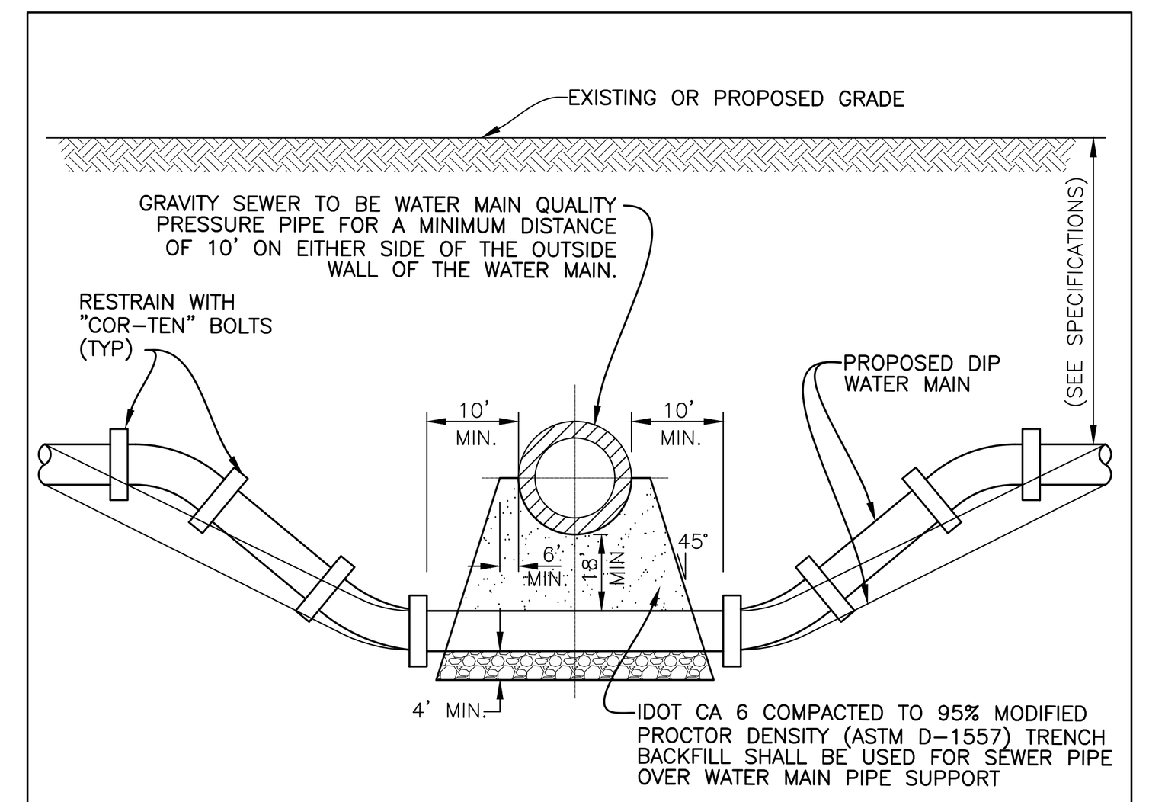
06-01-22
VALVE BOX DETAIL
S-WM-VALVEBOX



NOTES:

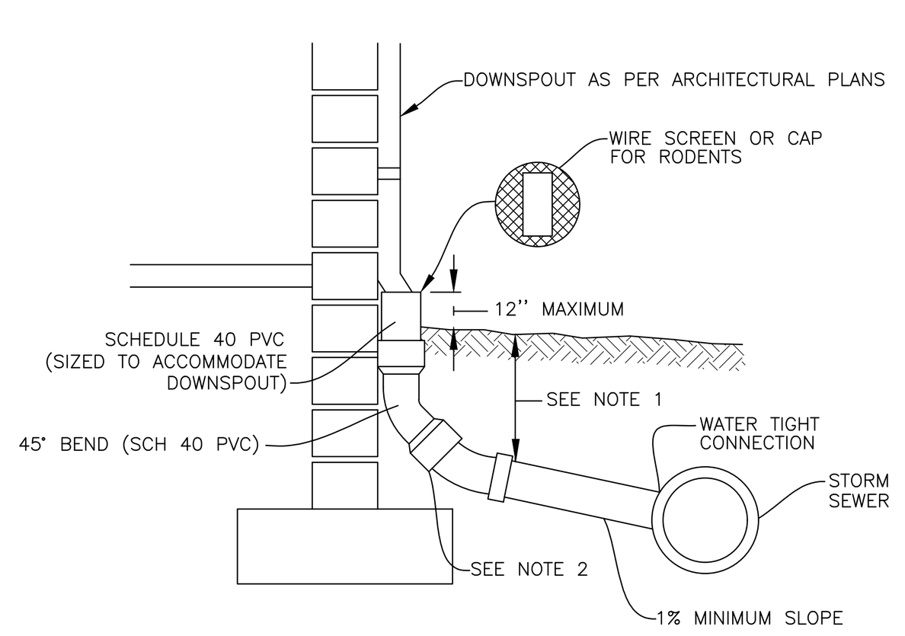
1. INSTALL MINIMUM 4" OF BEDDING MATERIAL UNDER STRUCTURE BOTTOM SECTION AND FILL ENTIRE EXCAVATION ALL AROUND STRUCTURE UP TO C.L. OF PIPE WITH BEDDING AND HAUNCHING MATERIAL.
2. PIPE OPENINGS SHALL BE CAST INTO WALL WITH RESILIENT RUBBER WATER TIGHT PIPE SLEEVES.
3. STRUCTURE FRAME, ADJUSTING RINGS AND ALL CONCRETE SECTIONS SHALL BE SET ON AND SEALED WITH BITUMINOUS MASTIC JOINT MATERIAL.
4. FILL LUG HOLES WITH BITUMINOUS JOINING COMPOUND.

06-01-22
VALVE VAULT DETAIL
S-WM-VALVEVAULT



1. HORIZONTAL AND VERTICAL SEPARATION BETWEEN WATER MAINS AND SEWER SHALL COMPLY WITH IEPA REQUIREMENTS.
2. CONTRACTOR MAY BEND WATER MAIN PIPE UNIFORMLY UNDER SEWERS WITHOUT USING FITTINGS. PROVIDED THAT JOINT DEFLECTION DOES NOT EXCEED 5 DEGREES PER JOINT FOR PIPE UNDER 14" IN DIAMETER AND 3 DEGREES PER JOINT FOR PIPE 14" AND OVER IN DIAMETER. IF FITTINGS ARE USED, CONTINUOUS STRAPPING WITH RODS, STRAPS, NUTS AND BOLTS BELOW NORMAL WATER MAIN DEPTH ARE REQUIRED, OR RETAINER GLANDS MAY BE USED IN LIEU OF STRAPPING.

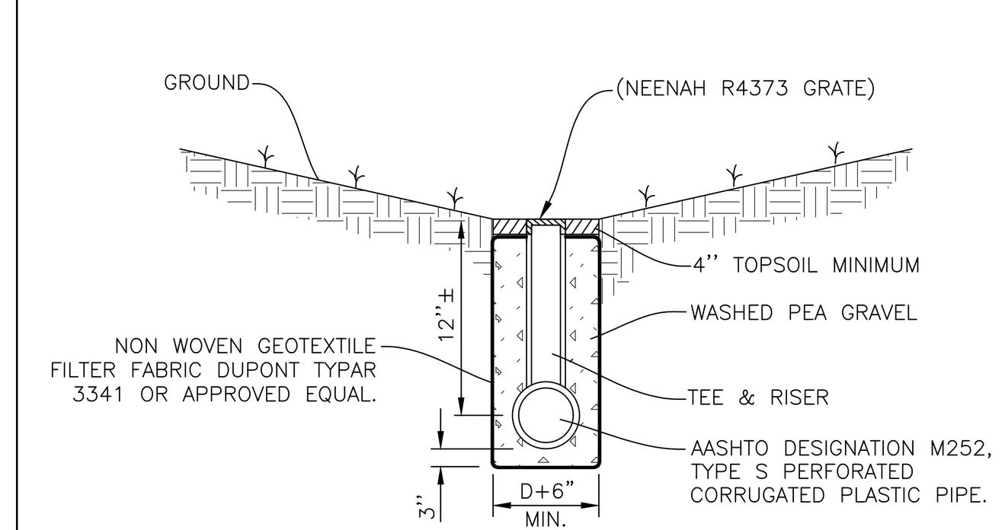
06-01-22
WATER MAIN LOWERING DETAIL
S-WM-LOWERING



NOTES:

1. FOR ALL DEPTHS OF COVER LESS THAN TWO (2) FEET, PIPE MUST BE SCHEDULE 40 PVC. FOR DEPTHS OF COVER GREATER THAN TWO (2) FEET REFER TO SPECIFICATIONS FOR ALLOWABLE PIPE TYPES.
2. A WATERTIGHT CONNECTION SHALL BE MAINTAINED WITH ANY TRANSITION FROM SCHEDULE 40 PVC PIPE TO ANY OTHER PIPE TYPE.

06-01-17
DOWNSPOUT COLLECTOR DETAIL
S-ST-DOWNSPOUT



NOTE:

1. PERFORATIONS MAY BE CIRCULAR OR SLOTTED, BUT SHALL PROVIDE A MINIMUM OF 1.0 IN^2/FT OF INLET AREA.

06-01-15
STORM UNDERDRAIN AND CLEANOUT DETAIL
S-ST-UNDERDRAIN

SHOULD A CONFLICT ARISE BETWEEN MANHARD DETAILS AND THE VILLAGE DETAILS, THE VILLAGE DETAILS SHALL TAKE PRECEDENCE.

TRIA ARCHITECTURE

CIVIL/LANDSCAPE CONSULTANT: Manhard Consulting, One Overlook Point, Suite 290, Lincolnshire, IL 60069 (P) (847) 634-5550

STRUCTURAL CONSULTANT: Larson Engineering, Inc. (P) 630.357.0540 (F) 630.357.0164

MEP/FP CONSULTANT: IDAS

KIRBY SCHOOL DISTRICT 140

2023

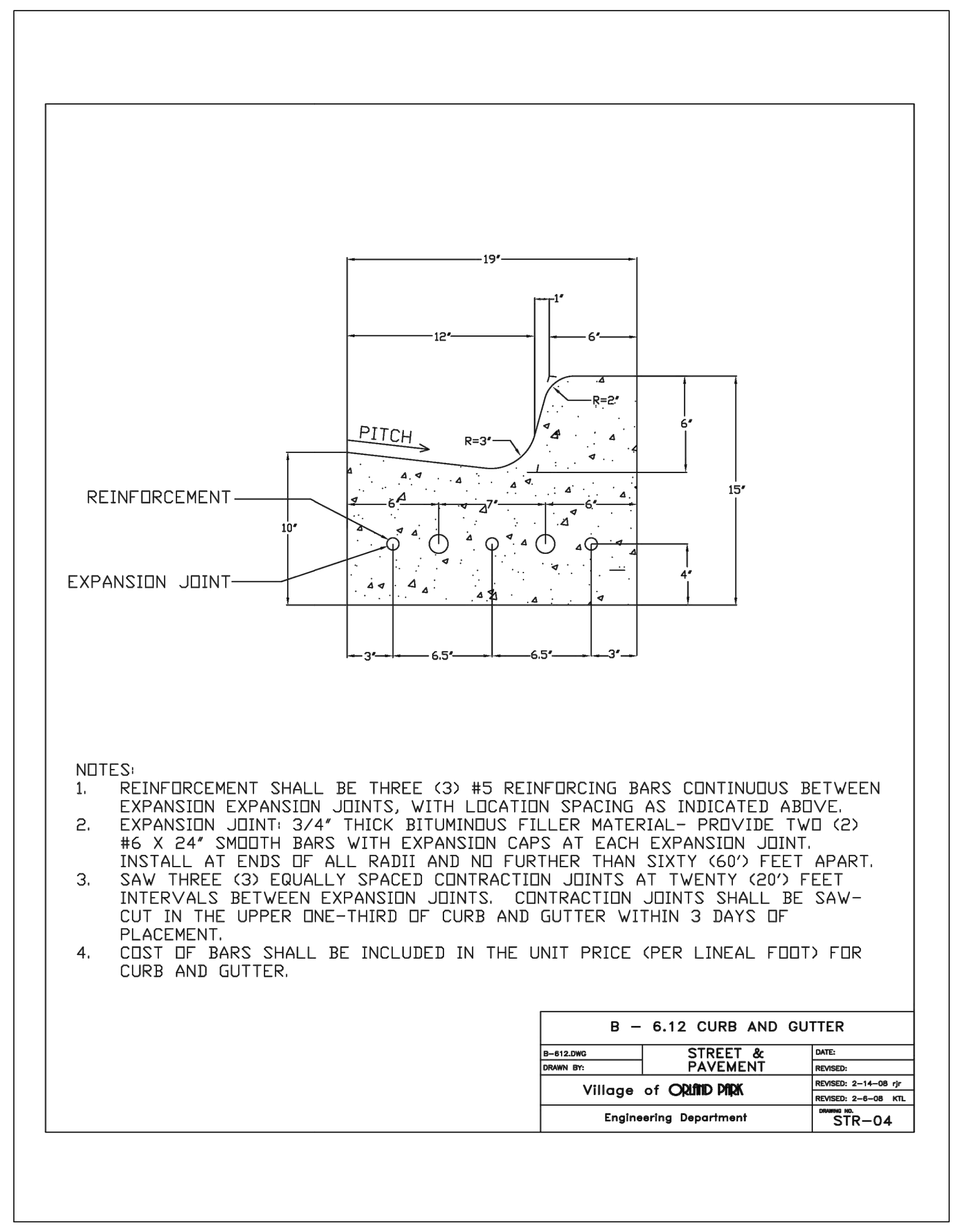
NEW FERNWAY PARK ELEMENTARY SCHOOL

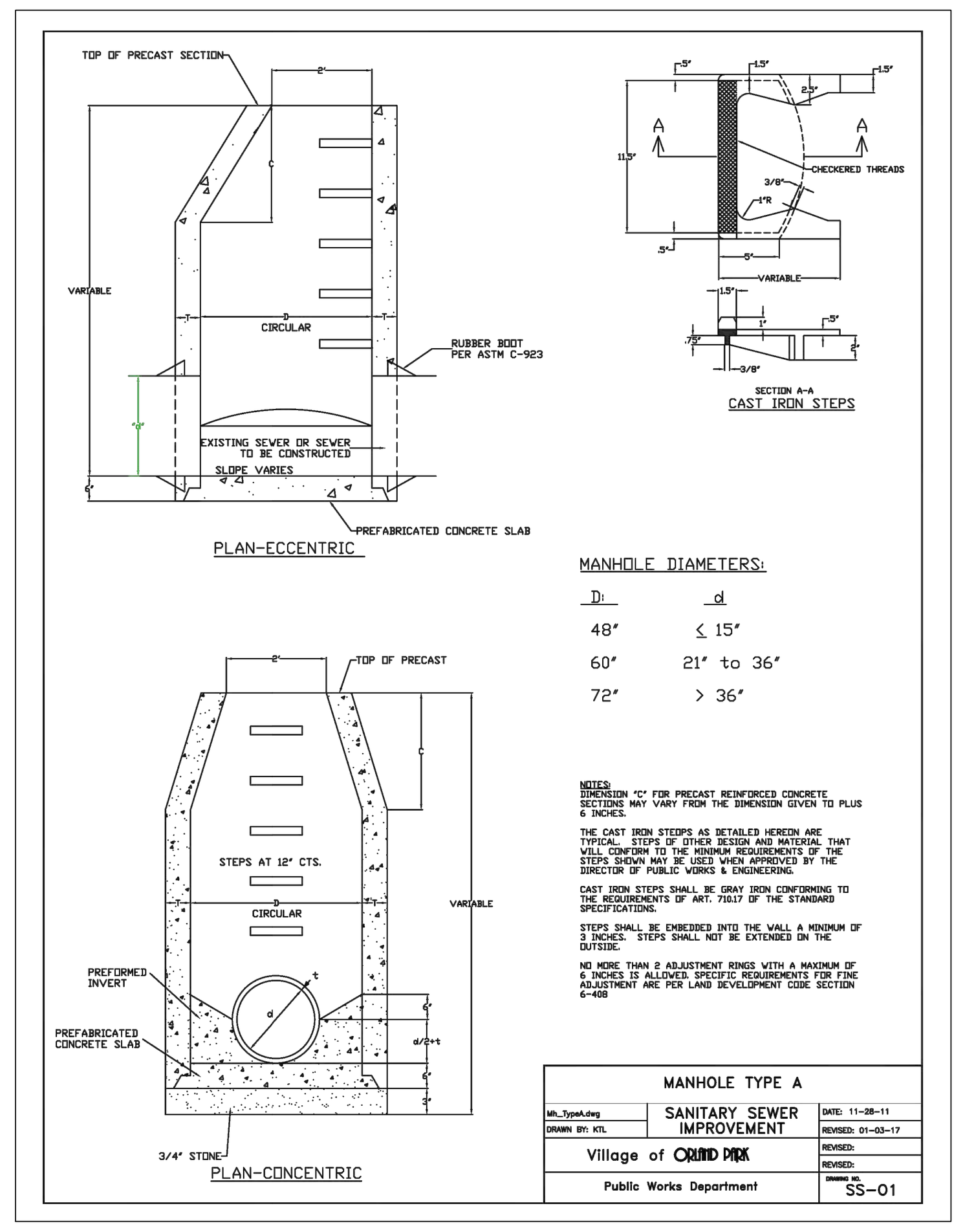
16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

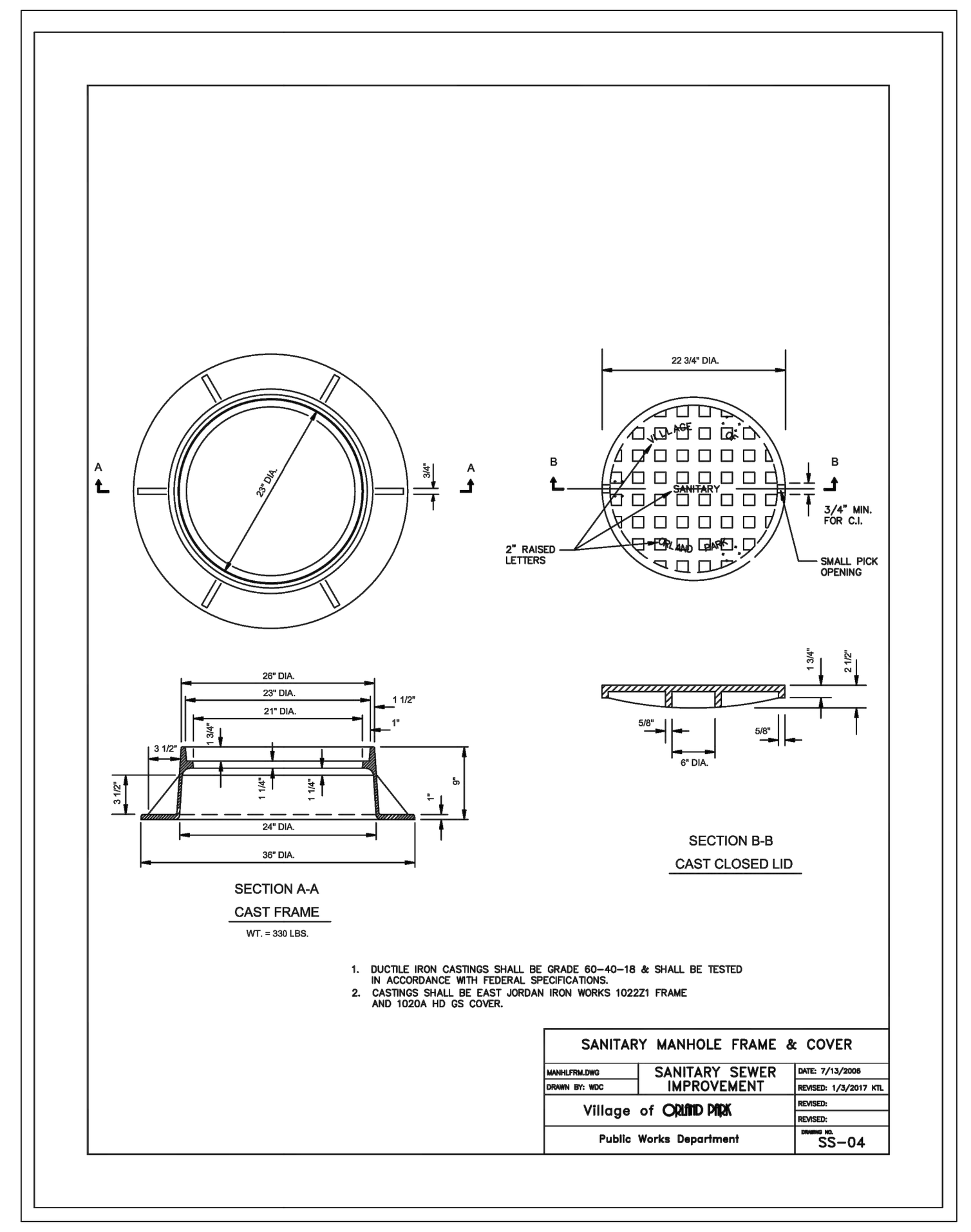
PROJECT NUMBER: 21-054.1
PROJECT MANAGER: YG
DRAWN BY:
ISSUED FOR BID: 10/30/2023
REVISIONS:

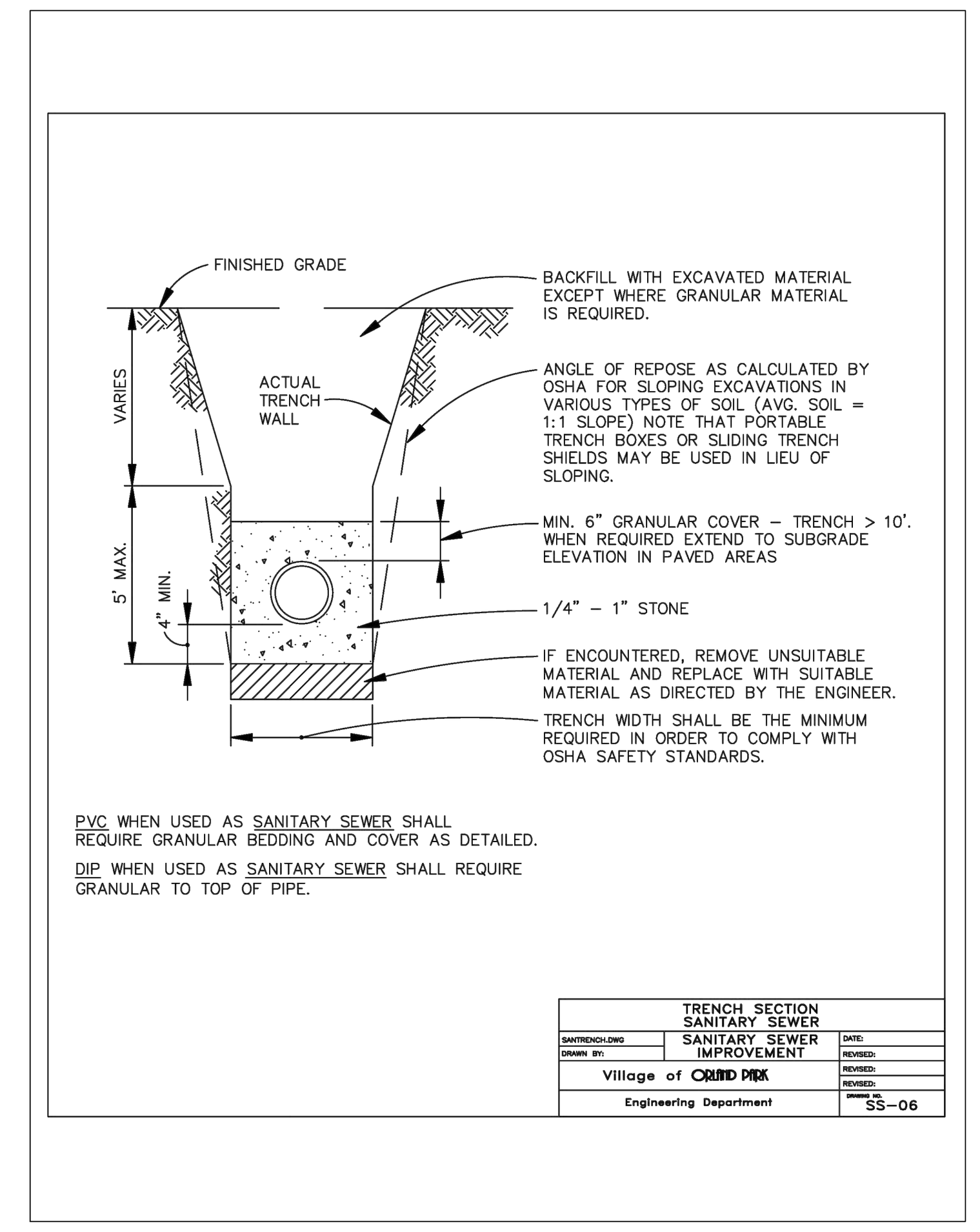
CONSTRUCTION DETAILS

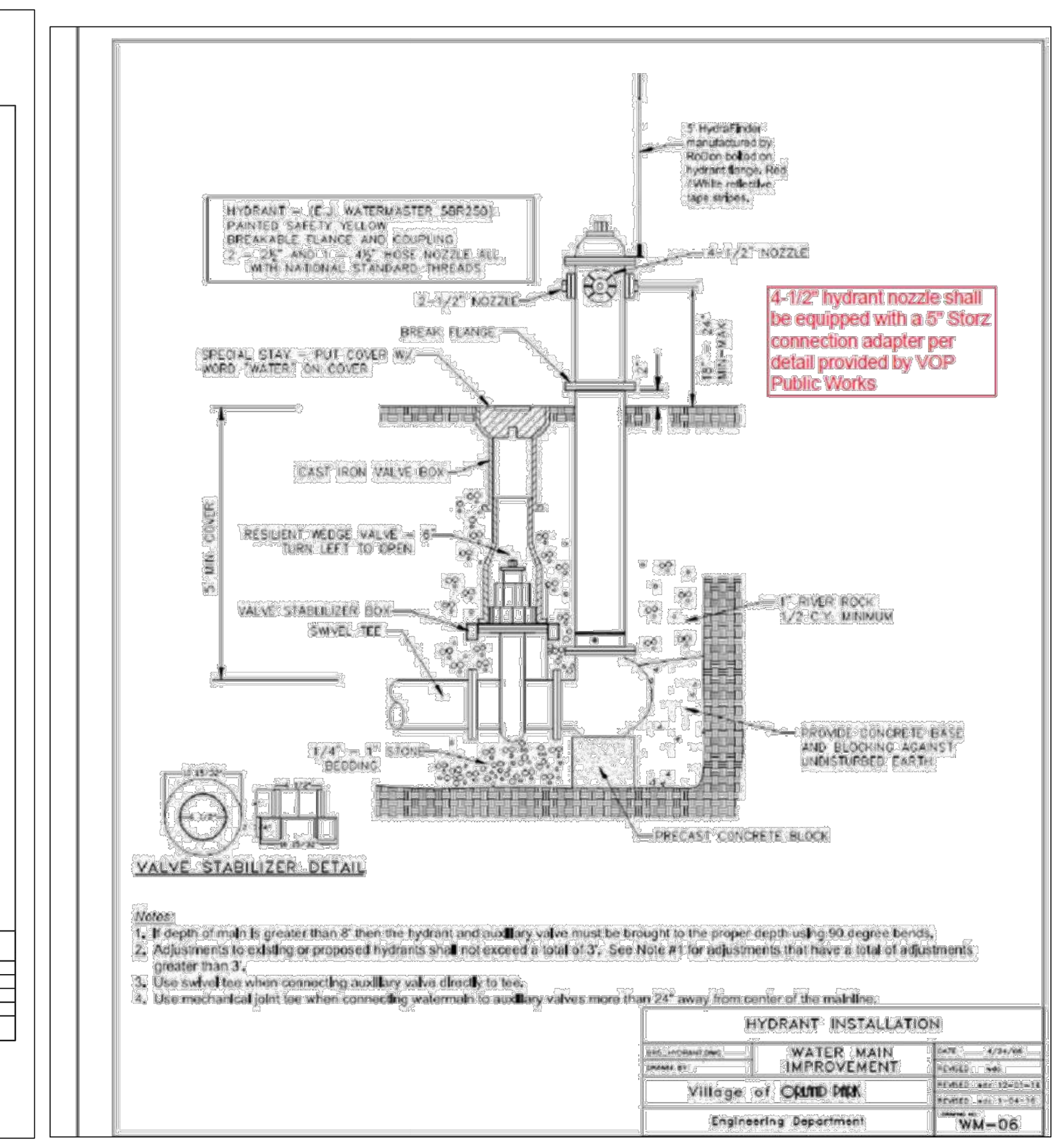
C11.00

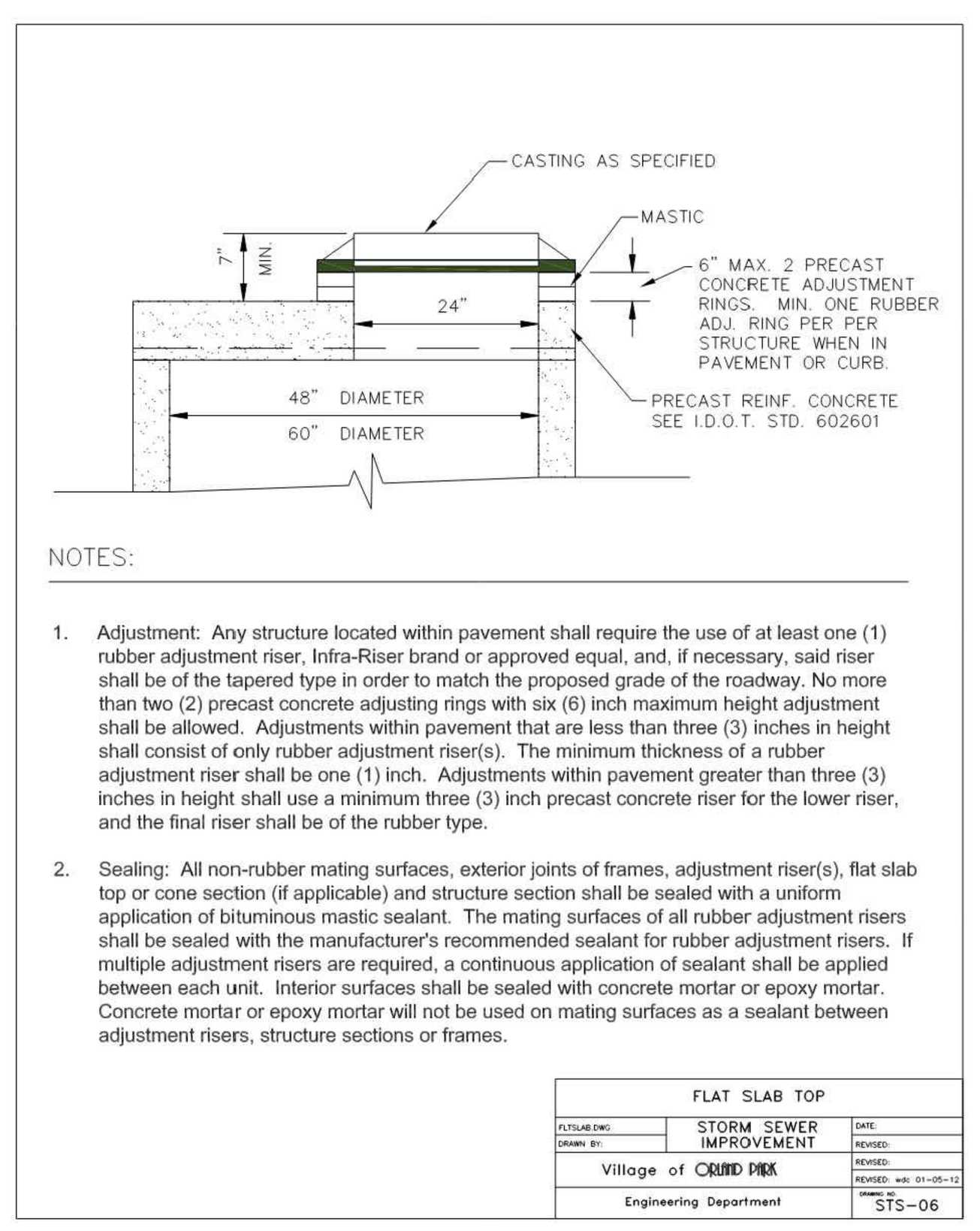

PITCH
REINFORCEMENT
EXPANSION JOINT
NOTES:
1. REINFORCEMENT SHALL BE THREE (3) #5 REINFORCING BARS CONTINUOUS BETWEEN EXPANSION EXPANSION JOINTS, WITH LOCATION SPACING AS INDICATED ABOVE.
2. EXPANSION JOINT: 3/4" THICK BITUMINOUS FILLER MATERIAL- PROVIDE TWO (2) #6 X 24" SMOOTH BARS WITH EXPANSION CAPS AT EACH EXPANSION JOINT. INSTALL AT ENDS OF ALL RADII AND NO FURTHER THAN SIXTY (60') FEET APART.
3. SAW THREE (3) EQUALLY SPACED CONTRACTION JOINTS AT TWENTY (20') FEET INTERVALS BETWEEN EXPANSION JOINTS. CONTRACTION JOINTS SHALL BE SAW-CUT IN THE UPPER ONE-THIRD OF CURB AND GUTTER WITHIN 3 DAYS OF PLACEMENT.
4. COST OF BARS SHALL BE INCLUDED IN THE UNIT PRICE (PER LINEAL FOOT) FOR CURB AND GUTTER.
B - 6.12 CURB AND GUTTER
STREET & PAVEMENT
Village of ORLAND PARK
Engineering Department
STR-04

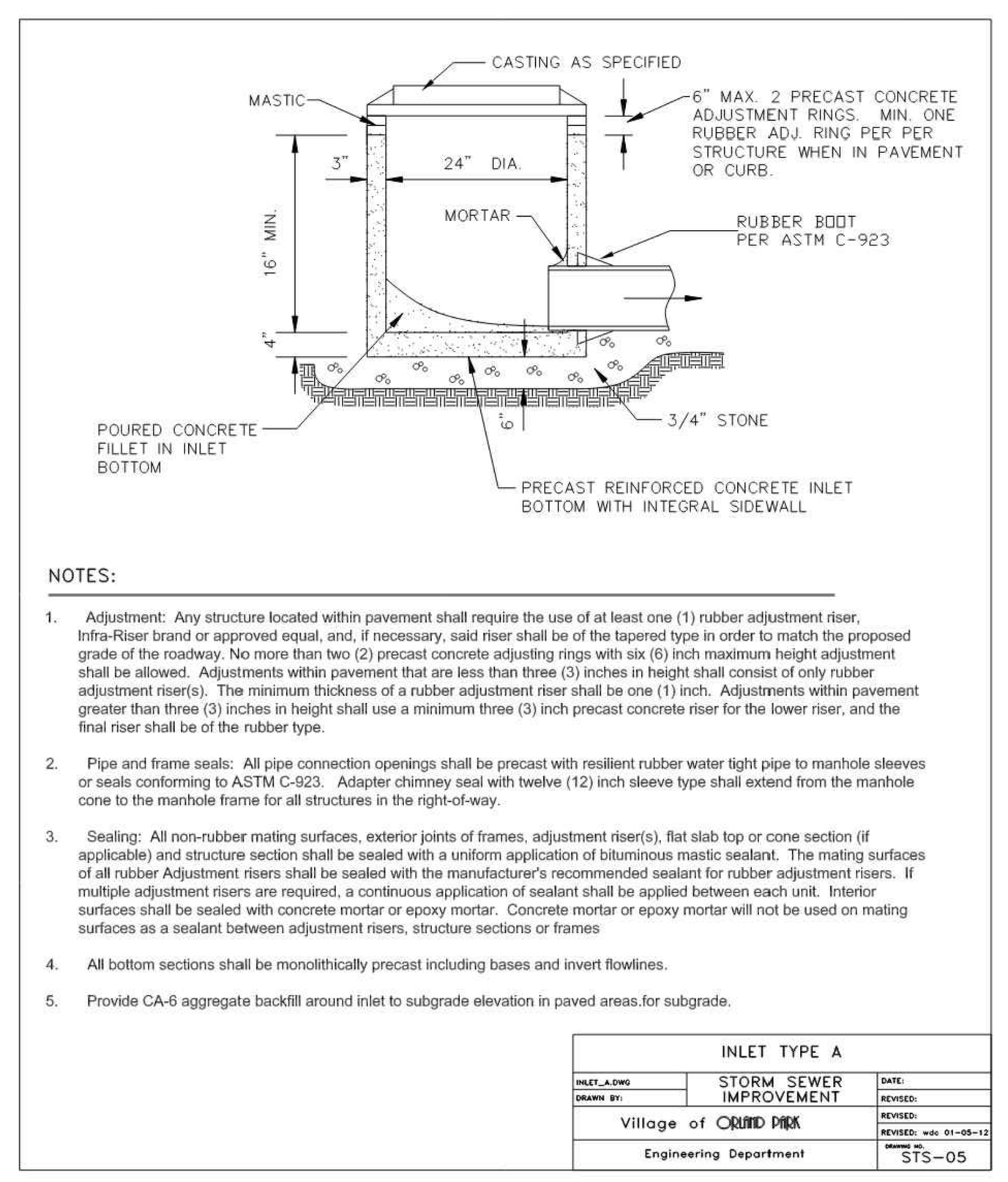


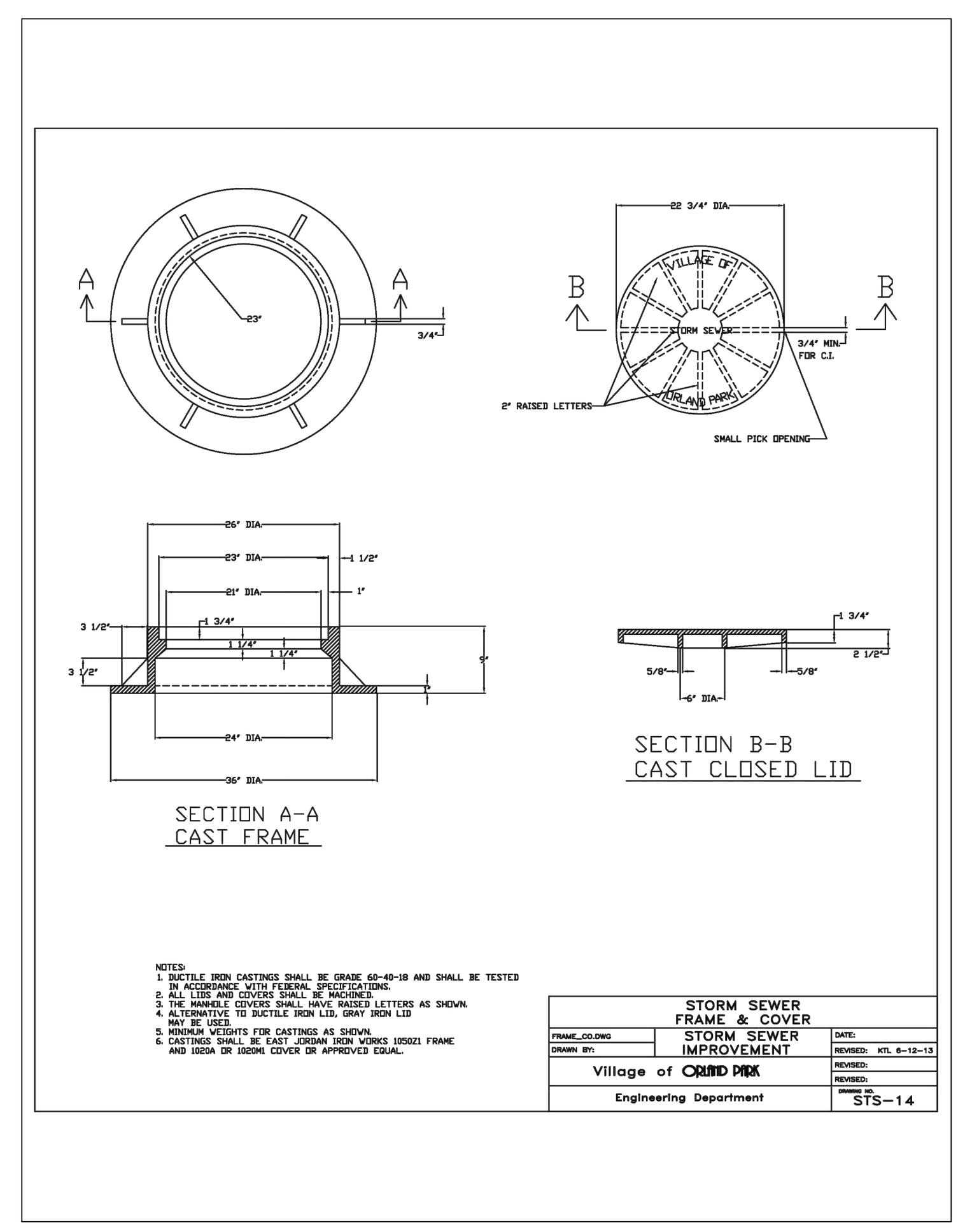


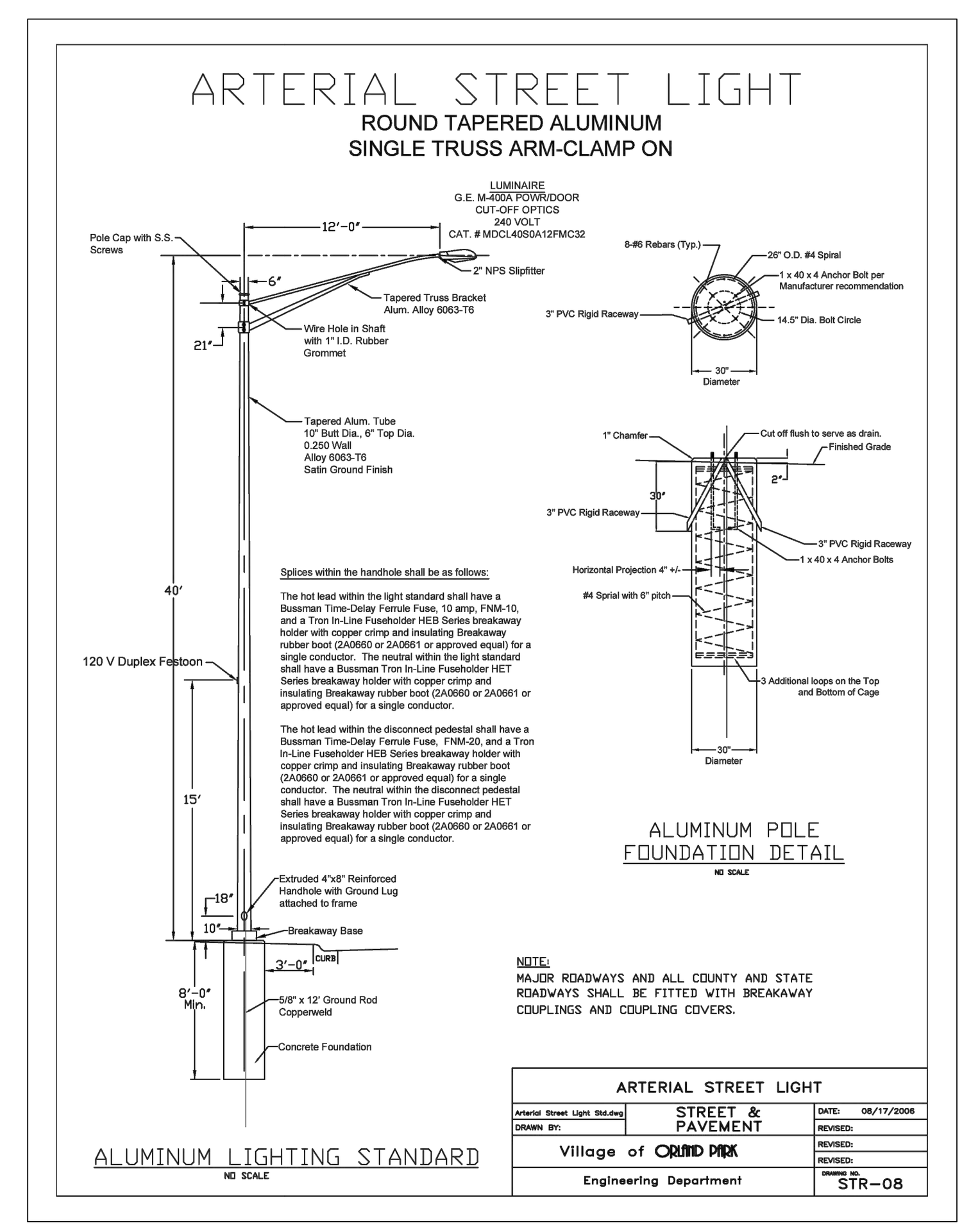

FINISHED GRADE
ACTUAL TRENCH WALL
BACKFILL WITH EXCAVATED MATERIAL EXCEPT WHERE GRANULAR MATERIAL IS REQUIRED.
ANGLE OF REPOSE AS CALCULATED BY OSHA FOR SLOPING EXCAVATIONS IN VARIOUS TYPES OF SOIL (AVG. SOIL = 1:1 SLOPE) NOTE THAT PORTABLE TRENCH BOXES OR SLIDING TRENCH SHIELDS MAY BE USED IN LIEU OF SLOPING.
MIN. 6" GRANULAR COVER - TRENCH > 10'. WHEN REQUIRED EXTEND TO SUBGRADE ELEVATION IN PAVED AREAS
1/4" - 1" STONE
IF ENCOUNTERED, REMOVE UNSUITABLE MATERIAL AND REPLACE WITH SUITABLE MATERIAL AS DIRECTED BY THE ENGINEER.
TRENCH WIDTH SHALL BE THE MINIMUM REQUIRED IN ORDER TO COMPLY WITH OSHA SAFETY STANDARDS.
PVC WHEN USED AS SANITARY SEWER SHALL REQUIRE GRANULAR BEDDING AND COVER AS DETAILED.
DIP WHEN USED AS SANITARY SEWER SHALL REQUIRE GRANULAR TO TOP OF PIPE.
TRENCH SECTION SANITARY SEWER
SANITARY SEWER IMPROVEMENT
Village of ORLAND PARK
Engineering Department
SS-06

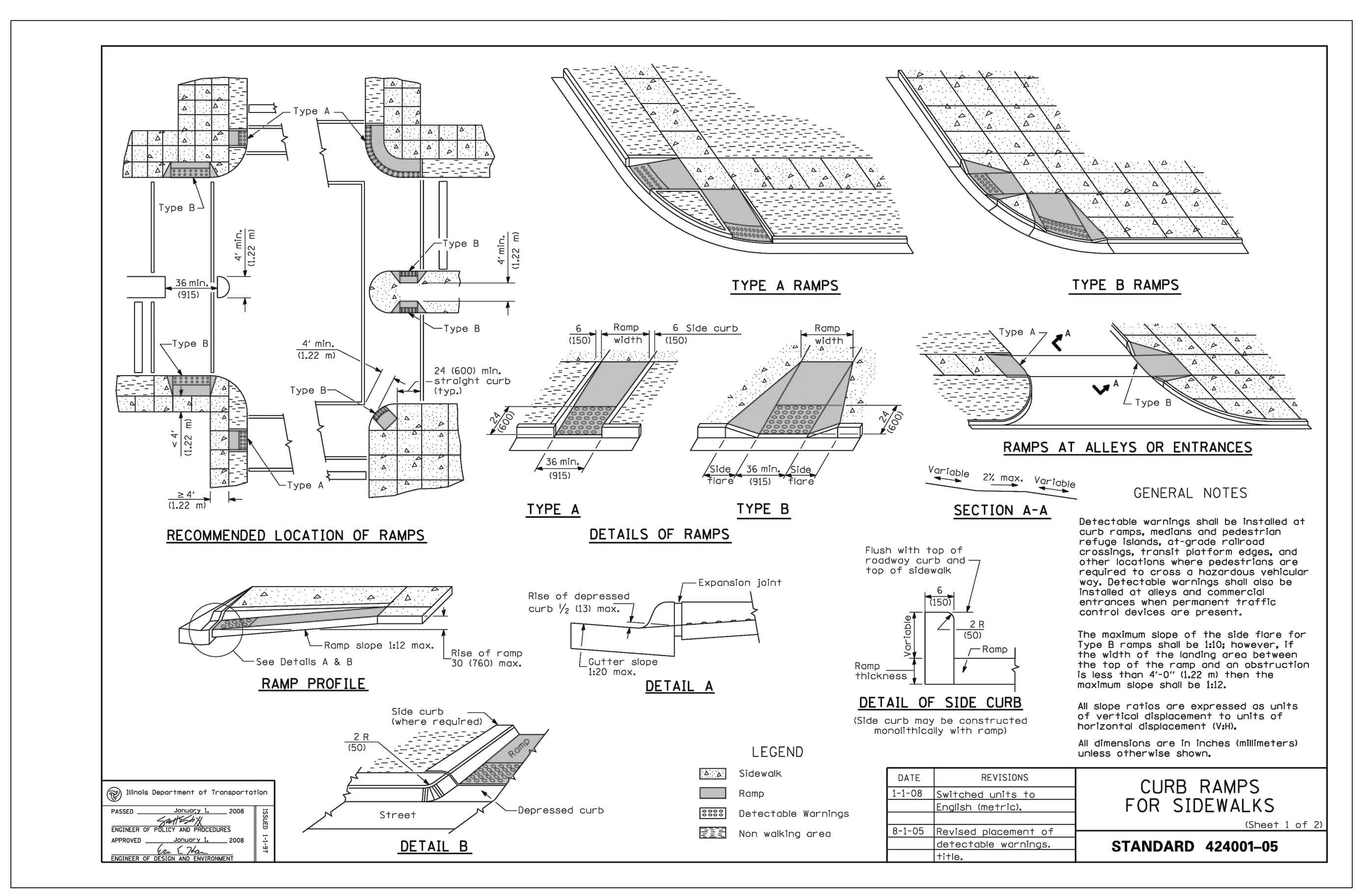


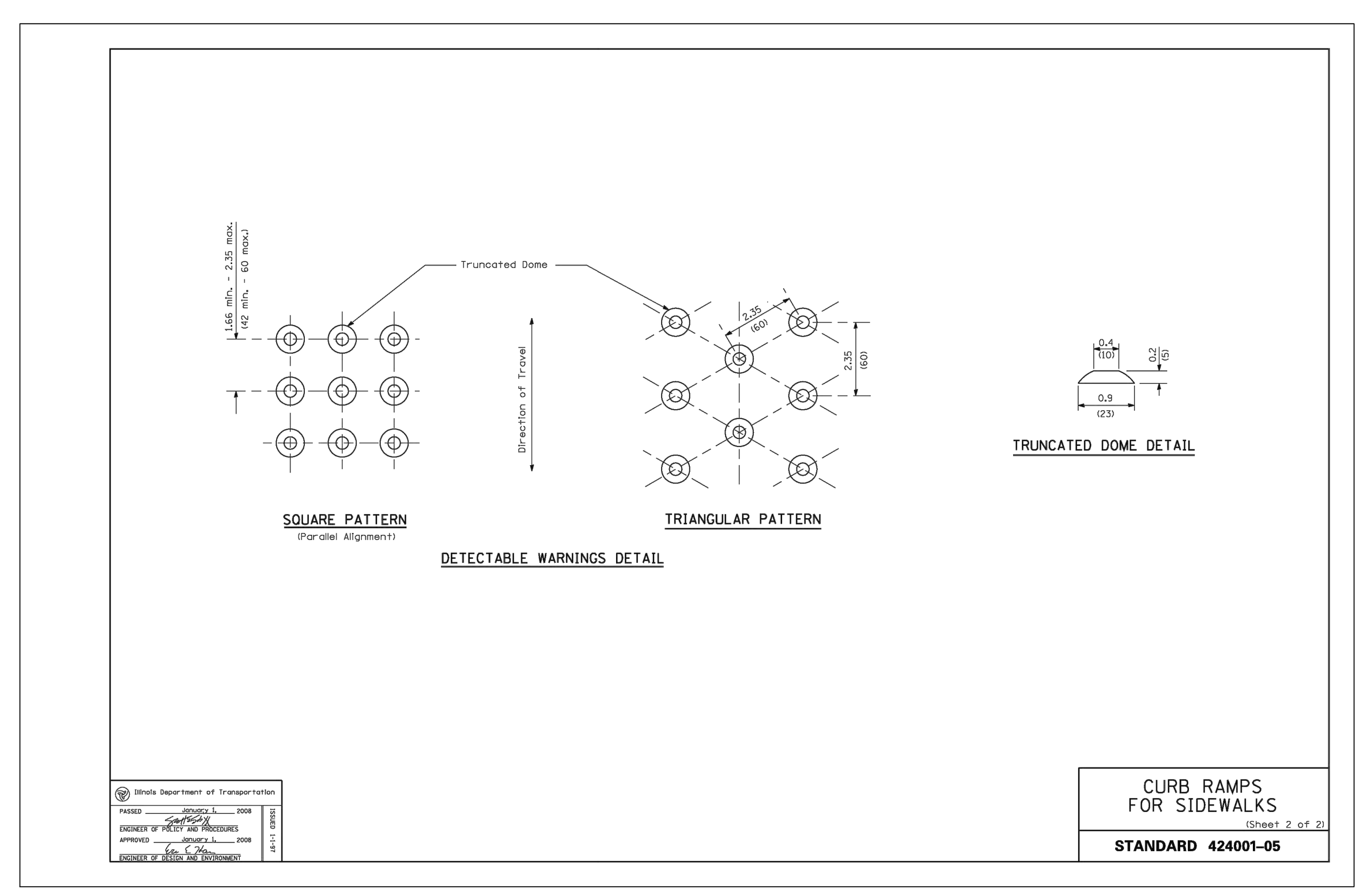

CASTING AS SPECIFIED
MASTIC
6" MAX. 2 PRECAST CONCRETE ADJUSTMENT RINGS. MIN. ONE RUBBER ADJ. RING PER PER STRUCTURE WHEN IN PAVEMENT OR CURB.
PRECAST REINF. CONCRETE SEE I.D.O.T. STD. 602601
48" DIAMETER
60" DIAMETER
FLAT SLAB TOP
STORM SEWER IMPROVEMENT
Village of ORLAND PARK
Engineering Department
STS-06


CASTING AS SPECIFIED
MASTIC
6" MAX. 2 PRECAST CONCRETE ADJUSTMENT RINGS. MIN. ONE RUBBER ADJ. RING PER PER STRUCTURE WHEN IN PAVEMENT OR CURB.
24" DIA.
MORTAR
RUBBER BOOT PER ASTM C-923
POURED CONCRETE FILLET IN INLET BOTTOM
3/4" STONE
PRECAST REINFORCED CONCRETE INLET BOTTOM WITH INTEGRAL SIDEWALL
INLET TYPE A
STORM SEWER IMPROVEMENT
Village of ORLAND PARK
Engineering Department
STS-05




ARTERIAL STREET LIGHT
ROUND TAPERED ALUMINUM
SINGLE TRUSS ARM-CLAMP ON
ALUMINUM POLE FOUNDATION DETAIL
ALUMINUM LIGHTING STANDARD
NOTE:
MAJOR ROADWAYS AND ALL COUNTY AND STATE ROADWAYS SHALL BE FITTED WITH BREAKAWAY COUPLINGS AND COUPLING COVERS.
ARTERIAL STREET LIGHT
STREET & PAVEMENT
Village of ORLAND PARK
Engineering Department
STR-08


TYPE A RAMPS
TYPE B RAMPS
RAMPS AT ALLEYS OR ENTRANCES
RECOMMENDED LOCATION OF RAMPS
DETAILS OF RAMPS
SECTION A-A
GENERAL NOTES
RAMP PROFILE
DETAIL A
DETAIL OF SIDE CURB
DETAIL B
LEGEND
Sidewalk
Ramp
Detectable Warnings
Non walking area
CURB RAMPS FOR SIDEWALKS
STANDARD 424001-05



SHOULD A CONFLICT ARISE BETWEEN MANHARD DETAILS AND THE VILLAGE DETAILS, THE VILLAGE DETAILS SHALL TAKE PRECEDENCE.

KIRBY SCHOOL DISTRICT 140

2023

NEW FERNWAY PARK ELEMENTARY SCHOOL

16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

TRIA ARCHITECTURE

ORLAND PARK CONSTRUCTION DETAILS

C12.00

MATERIALS SPECIFICATIONS FOR SEWAGE COLLECTION

1. Pipe Material for Sewers (shall be as specified on the plans)

   A. Polyvinyl Chloride (PVC) sewer pipe shall conform to ASTM-D-3034, SDR26 and shall be manufactured and supplied in accordance with UNI-B-81 (Uni-Bell Plastic Pipe Association). Unless otherwise called for all pipe through 15" shall meet this specification. Joints shall be rubber gasketed in accordance with ASTM D-3212.

   B. Class 52 ductile iron pipe (AWWA C151), with AWWA C-111 joints shall be used where the minimum separation cannot be maintained between water and sewer lines, within casing pipe installations, or for other special conditions as directed by Illinois-American.

2. Manhole Materials

   Sanitary sewer manholes shall be of precast concrete unit construction (ASTM- C478) with an offset cone and joints sealed with butyl based material. Concrete adjustment rings shall be used where adjustment is necessary. Adjustment sections shall not exceed 12" vertically overall. All joints shall be sealed with Rubber-Nec, or approved equal Butyl based material. Cement grouting of the seams and joints should not be completed.

   Butyl material shall total a minimum width of 2" wide as applied, in two pieces. Manholes shall be 48" inside diameter on sewers 24" and smaller, and shall be 60" inside diameter for sewers 27" through 48".

   Sanitary sewer manholes shall have poured-in-place or precast inverts. The inverts shall conform to the sewer grades with smooth, well rounded junctions and transitions. A flexible union between the pipe and manhole wall, meeting ASTM C-923, cast integrally into the manhole wall, shall be provided for each pipe connection to the manhole. Unions shall be the Interpace Lock Joint Flexible Manhole Sleeve, the A-Lok Manhole Pipe Connector, or approved equal. Such unions shall be selected and installed in accordance with the manufacturer's specifications for the specific type of pipe used. Sanitary manhole castings shall be Neenah R-1772-B or approved equal and shall have concealed pick holes. Lids shall be Neenah Foundry Type B "Self Sealing" with the word "SANITARY" imprinted. Manhole steps shall be M-A Industries plastic coated.

   Manholes located in areas subject to flooding, or located in open fields, shall be furnished with waterproof frames and lids, Neenah Foundry F-1916-C complete with stainless steel anchor bolts or approved equal.

3. Drop Manholes

   An exterior drop pipe shall be provided for a sewer entering a manhole at an elevation of 24" or more above the manhole invert. The entire drop assembly shall be cast in concrete monolithically with the manhole barrel section. The diameter of the drop pipe shall be smaller than the diameter of the entering sewer by two diameters, provided that the minimum diameter of the drop pipe shall not be less than 8" diameter.

4. Service Lead Material

   Service leads shall be a minimum of 6" diameter. Pipe shall be PVC SDR35, Resin #12454B, or ductile iron. Where ductile iron pipe is called for on the plans, the lead shall be Class 52 ductile iron with push-on joints (AWWA C-111).

   All pipes for leads shall include end stoppers for all stubs capable of withstanding a standard low pressure air test on the main sewer without leaking. Stoppers may be of an integrally cast breakout design.

   Joining of dissimilar pipes will be with use of a "Band Seal", using a flexible rubber sleeve sealed tightly to each pipe with a stainless steel clamp.

INSTALLATION SPECIFICATIONS FOR SEWAGE COLLECTION

1. Protection of Water Main Lines from Sanitary Sewers and Storm Sewers

   Water mains shall be protected for horizontal and vertical separation in accordance with the requirements of the "Technical Policy Statements", or the requirements of MWRDGC, whichever applies.

2. Depth of Pipe Cover — NOTE, THE MINIMUM SANITARY BURY DEPTH IS THE SAME AS THE MINIMUM WATER BURY DEPTH. SEE MINIMUM BURY DEPTHS IN ILAW STANDARDS BY DISTRICT.

   A minimum depth of 5'-0" shall be maintained for all sanitary sewer pipes. The 5'-0" depth shall be from proposed ground elevation to the crown of the pipe.

3. Pipe Installation

   PVC plastic pipe shall be installed in accordance with the requirements of ASTM Standard D-2321. Only Class I embedment materials shall be allowed.

4. Unsuitable Soil

   If unsuitable soil conditions are encountered under sanitary sewer mains which require removal of unsuitable material below the depth of the standard bedding, the material removed shall be replaced with granular material of the graduation approved by Illinois-American.

5. Service Lines

   All sanitary sewer service lines must be inspected by Illinois-American Water Company prior to back filling. Illinois-American must be provided with a minimum of 48 hours advanced notice (630/739-8839) to arrange for inspection. Notice is not considered valid until acknowledged by the Illinois-American representative. Sanitary sewer service connections shall be a minimum of 6" diameter unless otherwise noted on the plans.

   Tee or wye fittings shall be provided on the sanitary sewer main for all sanitary sewer service connections, except those which are made directly to a manhole. Wyes shall be laid so that material discharge is compatible with the direction of flow in the main.

   Service connections into manholes shall be made with uniform circular flow channels at the crown elevation of the sewer main, using a flexible sleeve (ASTM C-923), or approved equal. The service connection shall enter the manhole no more than two feet above the manhole invert for mains 24 inch and smaller. The invert shall match the crown of the main sewer when the main is larger than 24 inch.

   Risers shall be provided on service lines where the sewer main is greater than 12 feet below the proposed ground elevation and shall extend from the sewer main up to a point 9 feet below the proposed ground elevation.

   All sanitary sewer service lines must have a clean-out installed at the property line in Right-of-Way. To be installed per Clean-out detail.

6. Connecting to an Existing Main

   When it is necessary to connect a new sewer service to an existing sewer main by means other than an existing wye, tee or at an existing manhole, one of the following methods shall be used:

   1. Saw cut the sewer main by means of a Sewer Tap or similar device, and properly install a hub wye saddle or hub tee saddle, using a two-part epoxy glue compound.

   2. With a pipe cutter, neatly and accurately cut out desired length of pipe for insertion of proper wye fitting using "Band Seal" or similar couplings to hold it firmly in place.

   3. When a manhole is required to be installed on an existing main, a section of the main is to be removed and the new manhole is to be "spliced" into the line using mission couplings. The manhole is to be supplied with flexible manhole sleeves for connection to the main. A "doghouse" style manhole is not allowed.

7. Connection to an Existing Manhole

   A direct connection to an existing manhole is to be made by core drilling the manhole and connecting the new main to the manhole by use of a flexible manhole sleeve ("boot") or a concrete manhole adapter (Fernco concrete manhole adapter, or approved equal).

8. Cleaning

   In preparation for final inspection, all sanitary sewers shall be jet rod cleaned. Jet cleaning may also be required prior to testing.

9. Unauthorized Connections

   Connections to the sanitary sewer system with the following items shall not be permitted: down-spouts or roof drains; sump pumps; footing drains or drainage tiles; window wells or area drains; driveway drains, etc. No storm water or groundwater shall be allowed to enter the sanitary sewer system.

TESTING

1. Testing of Sanitary Sewers

   Testing for sanitary sewers for leakage will be witnessed by an Illinois-American representative or approved site inspector after all service connections have been stubbed to the property line. Infiltration, exfiltration or air pressure tests will be required at Illinois-American's discretion. Note that the sewer must be clean to the satisfaction of Illinois- American at the time of testing. If additional cleaning is required, the cost for this will not be borne by Illinois-American Water Company, and shall be paid by the contractor.

   All sanitary sewers, including manholes, will be tested for leakage and shall satisfactorily meet the tests and requirements prior to acceptance of the work. Illinois-American or approved site inspector may order leakage tests made on sections of sewer as they are completed. Right is reserved to order the tests performed before back fill is placed over the pipe joints.

   The Developer / Contractor shall furnish all labor, testing materials, and equipment (such as plugs and standpipes) and shall perform the tests described herein under the supervision and to the satisfaction of Illinois-American. There are five tests which will be employed for gravity sewers:

   1.) Infiltration test, exfiltration test or air pressure test
   2.) Deflection testing for thermoplastic pipe
   3.) Sonar Televising
   4.) Manhole vacuum test

2. Air Pressure Tests

   The section of sewer to be tested shall have been trench back filled and cleared. The sewer pipe shall be pressurized to 5 PSIG above the average back pressure of groundwater over the sewer pipe and the air pressure allowed to stabilize for at least two minutes.

   After the stabilization period, the line shall be pressurized to 3.5 PSIG and the time, in minutes, measured for a pressure drop to 2.5 PSIG. If ground- water is present, the air pressure within shall be increased to 3.5 PSIG above the level of the groundwater at the highest elevation of the sewer and the drop of one pound of air pressure measured in minutes (2.31 ft. of water = 1 PSIG).

   Air leakage test results shall not be less than the time per inch of pipe diameter per length of sewer pipe as specified in the table entitled "Air Test Table" as shown in Standard Specifications for Water and Sewer Main Construction in Illinois, and as shown within the standard details.

3. Infiltration Test

   This test may be used only when groundwater levels are at least 2.0 feet above the crown of the pipe for the entire length of the section to be tested during the entire period of the test. Groundwater levels may be measured in an open trench, in standpipes previously placed in back filled trenches during the back filling operations, or with piezometers installed in the manhole wall. Infiltration through joints shall be measured by using a watertight weir or any other approved device for volumetric measurement installed at the lower end of the section under the test.

   The maximum allowable rate of infiltration shall not exceed 100 gallons per twenty-four (24) hours per mile per inch diameter of the sewer pipe, for any section of the system.

   Manholes will be tested by saturating the soil around the manhole. Test will be satisfactory if there are no visible leaks.

4. Deflection Testing for Flexible Thermo-Plastic Pipe

   The entire length of the main shall be tested for excessive deflection by pulling a "Go-No-Go" mandrel through the main from manhole to manhole.

   Whenever possible and practical, the testing shall initiate at the downstream line and proceed toward the upstream lines.

   Where deflection is found to be in excess of the allowable testing limits, the developer shall excavate the point of excess deflection and carefully compact around the point where the deflection was found. The line shall then be retested for deflection. However, after the initial testing, should the deflected pipe fail to return to the original size (inside diameter) the line shall be replaced.

   The deflection limits for flexible pipes shall not exceed 5% of the "Base I.D." of the pipe. A period of time will be required for the trench and pipe to come to equilibrium before the deflection test is performed. In all sewer systems the deflection test shall be performed no sooner than 30 days after the trench is back filled over the pipe.

5. Televising

   The Contractor shall produce a record video using a pan-and-tilt, radial viewing, pipe inspection camera that pans 275 degrees and rotates 360 degrees. The television camera used for the inspection shall be specifically designed and constructed for such inspection. The camera shall be operative in 100% humidity conditions. The Contractor shall use a camera with an accurate footage counter which displays on the monitor the exact distance of the camera from the centerline of the starting manhole. The Contractor shall use a camera with camera height adjustment so that the camera lens is always centered at one-half the inside diameter, or higher, in the pipe being televised. Lighting for the camera shall be suitable to allow a clear picture of the entire periphery of the pipe. A reflector in front of the camera may be required to enhance lighting in dark or large diameter pipe. The video camera shall be capable of showing on the tape the City name, Project name, Contractor name, date, line size and material, line identification (plan manhole numbers at both ends) and ongoing footage counter. The camera, television monitor, and other components of the video system shall be capable of producing picture quality to the satisfaction of the Owner; and if unsatisfactory, equipment shall be removed and replaced with adequate equipment. DVD video shall be supplied for all television surveys. All videos shall be submitted to the Owner and will become the property of the Owner. Videotapes shall be labeled with the above referenced information. The camera shall be moved through the line in either direction at a moderate rate, stopping when necessary to permit proper documentation of the sewer's condition. In no case will the television camera be pulled at a speed greater than 15 feet per minute. Manual winches, power winches, TV cable, and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions shall be used to move the camera through the sewer line. During the internal inspection, the television camera shall be temporarilly stopped at each defect along the line. The nature and location of the defect shall be recorded by the Contractor. The camera shall also be stopped at all service connections and identified by address or lot number. The camera operator shall slowly pan and tilt at beginning and ending manhole connections, each service connection, joints, visible defects and at pipe material transitions. TV inspection shall be continuous for pipe segments between manholes. Do not leave gaps in the video of a segment between manholes and do not show a single segment on more than one video, unless specifically approved by the Owner. The purpose of recording shall be to supply a visual and audio record of problem areas of the lines that may be replayed. Video recordings shall include an audio track recorded by the inspection technician during the actual inspection work describing the parameters of the line being inspected (i.e. location, depth, diameter, pipe material), as well as describing connections, defects and unusual conditions observed during the inspection.

6. Manhole Testing

   Vacuum testing of each manhole shall be carried out immediately after assembly, after all connections are made, and prior to backfilling. All lift holes shall be plugged with an approved non-shrink grout. No grout will be placed in the horizontal joints before testing. All pipes entering the manhole shall be plugged, taking care to securely brace the plugs from being drawn into the manhole. The test head shall be place at the inside of the top of the frame and the seal inflated in accordance with the manufacturer's recommendation. If using a "plate" style manhole tester, position the plate on the frame. A vacuum of 10 inches of mercury shall be drawn and the vacuum pump shut off. With the valves closed, that time shall be measured for the vacuum to drop to 9 inches. The manhole shall pass if the time is greater than 60 seconds for a 48" diameter manhole, 75 seconds for a 60" manhole and 90 seconds for a 72" manhole. If the manhole fails the test, complete necessary repairs and repeat test procedures until a satisfactory test is obtained.

ILLINOIS-AMERICAN WATER COMPANY
STANDARD

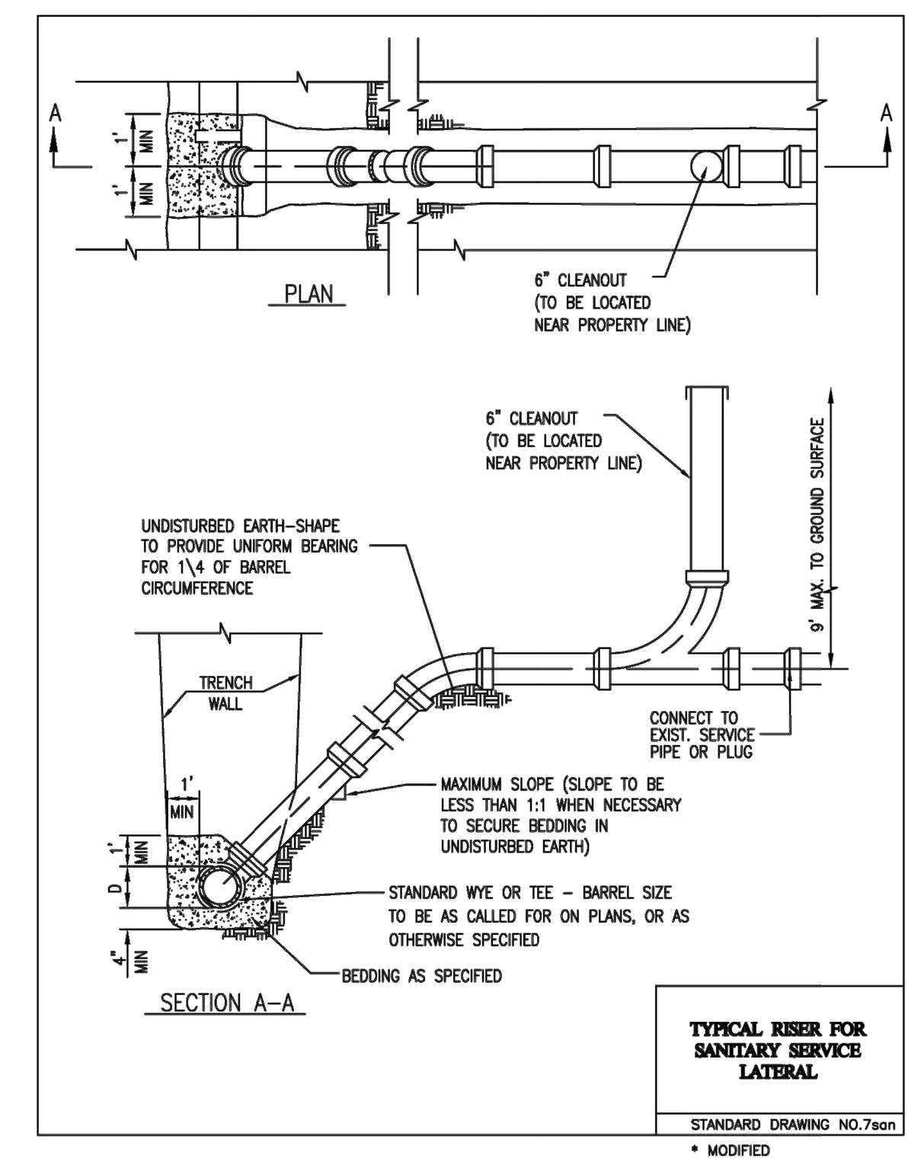
BASED ON EQUATIONS FROM ASTM C828
SPECIFICATION TIME (MIN:SEC) REQUIRED FOR
PRESSURE DROP FROM 3 1\2 TO 2 1\2 PSIG
WHEN TESTING ONE PIPE DIAMETER ONLY
PIPE DIAMETER, INCHES

	4"	6"	8"	10"	12"	15"	18"	21"	24"
25	0:04	0:10	0:18	0:28	0:40	1:02	1:29	2:01	2:38
50	0:09	0:20	0:35	0:55	1:19	2:04	2:56	4:03	5:17
75	0:13	0:30	0:53	1:23	1:59	3:06	4:27	6:04	7:55
100	0:18	0:40	1:10	1:50	2:38	4:08	5:56	8:05	10:34
125	0:22	0:50	1:28	2:18	3:18	5:09	7:26	9:55	11:20
150	0:26	0:59	1:46	2:45	3:58	6:11	8:30		
175	0:31	1:09	2:03	3:13	4:37	7:05			
200	0:35	1:19	2:21	3:40	5:17				12:06
225	0:40	1:29	2:38	4:08	5:40			10:25	13:36
250	0:44	1:39	2:56	4:35			8:31	11:35	15:07
275	0:48	1:49	3:14	4:43			9:21	12:44	16:38
300	0:53	1:59	3:31				10:12	13:53	18:09
350	1:02	2:19	3:47			8:16	11:54	16:12	21:10
400	1:10	2:38			6:03	9:27	12:36	18:31	24:12
450	1:19	2:50			6:48	10:38	15:19	20:50	27:13
500	1:28			5:14	7:34	11:49	17:01	23:09	30:14

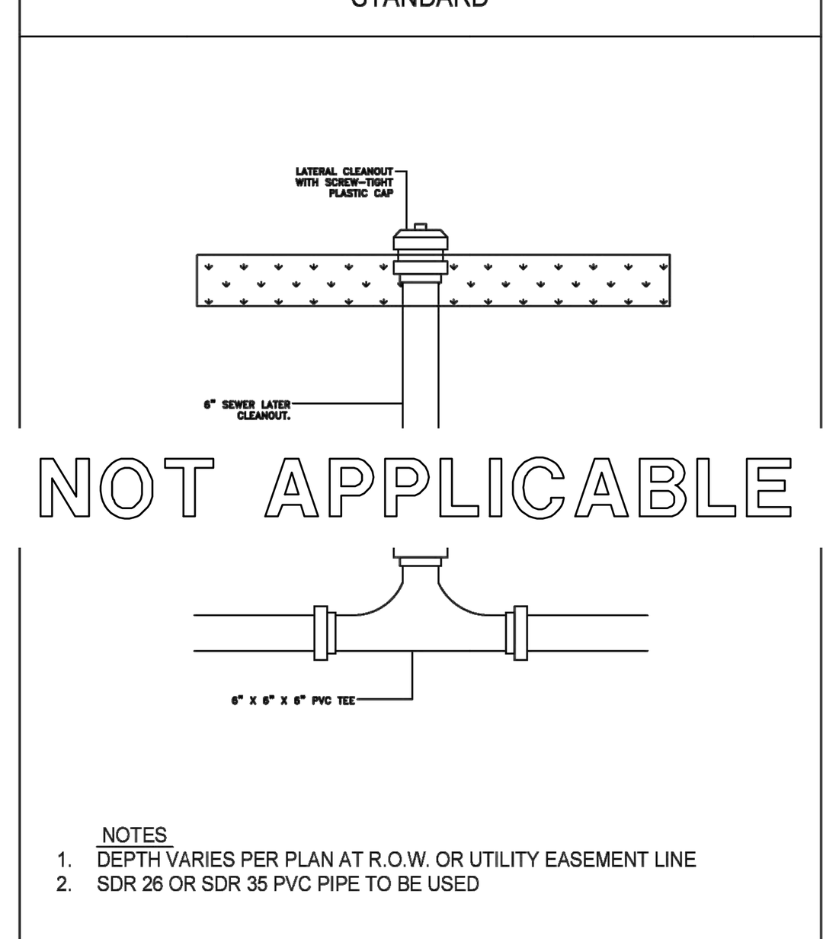
DEFLECTION CRITERIA

DIAMETER	BASE I.D. PER UNIBELL	5% MANDREL O.D.
6 IN.	5.79 IN.	5.50 IN.
8 IN.	7.76 IN.	7.37 IN.
10 IN.	9.71 IN.	9.23 IN.
12 IN.	11.56 IN.	10.98 IN.
15 IN.	14.14 IN.	13.43 IN.

SANITARY SEWER MAIN AIR TEST TABLE

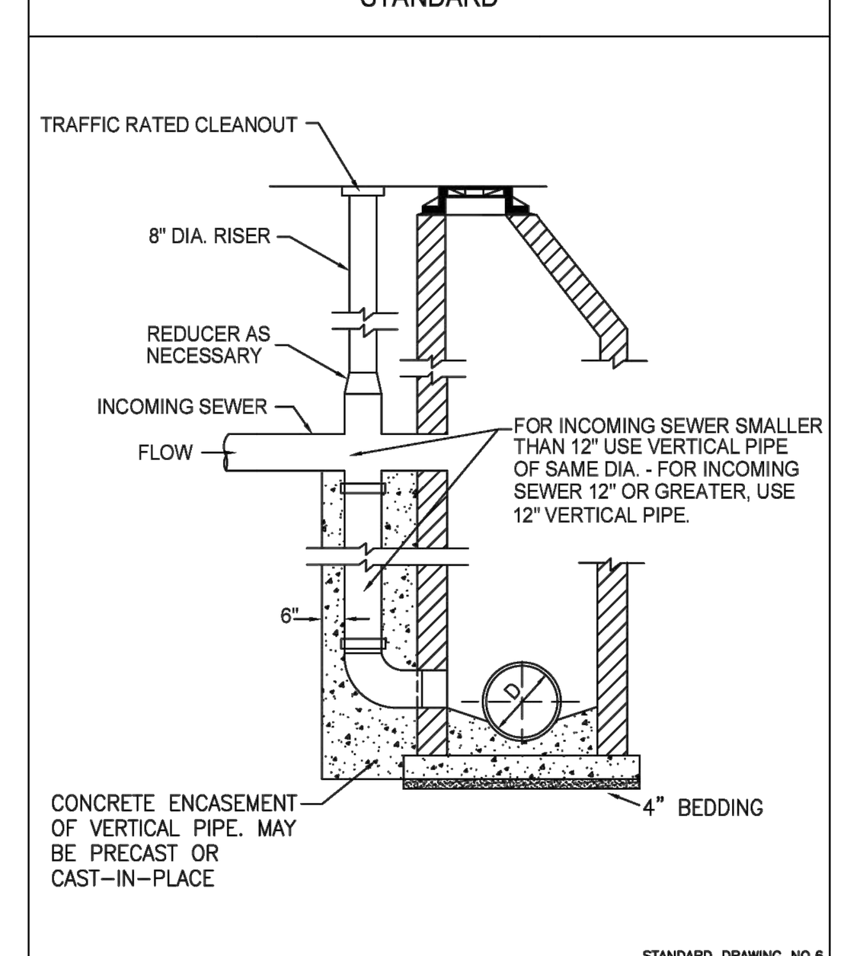


ILLINOIS-AMERICAN WATER COMPANY
STANDARD



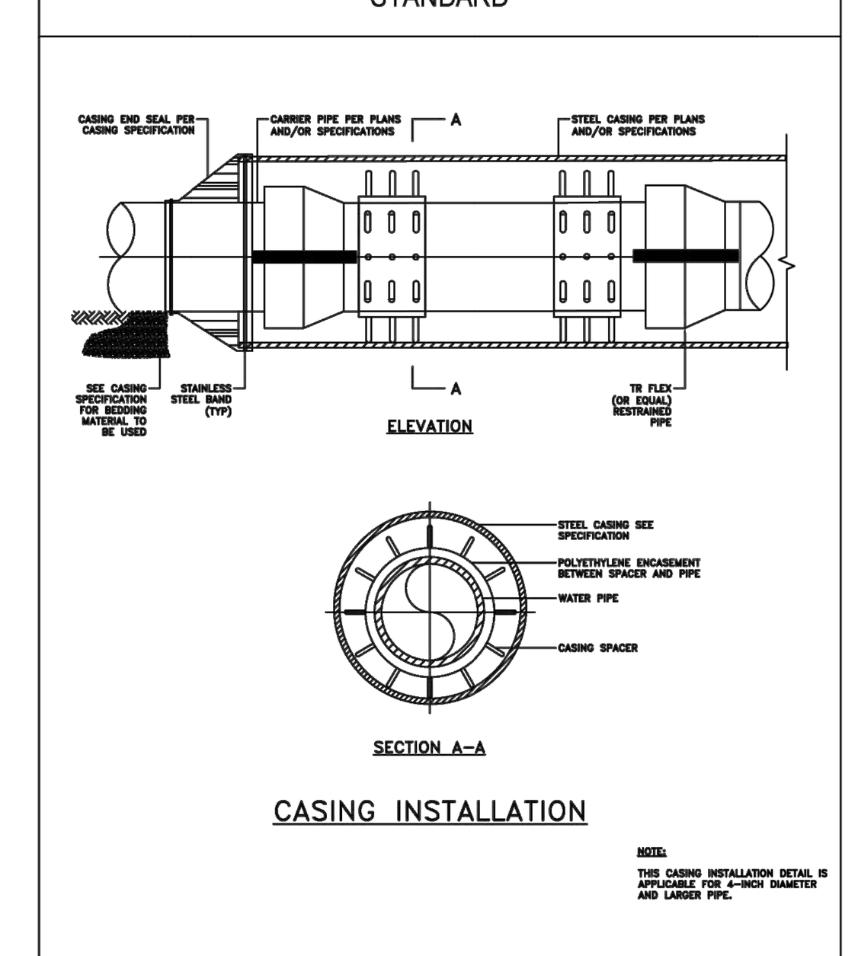
CLEANOUT DETAIL

ILLINOIS-AMERICAN WATER COMPANY
STANDARD



TYPICAL SEWER DROP MANHOLE CONNECTION

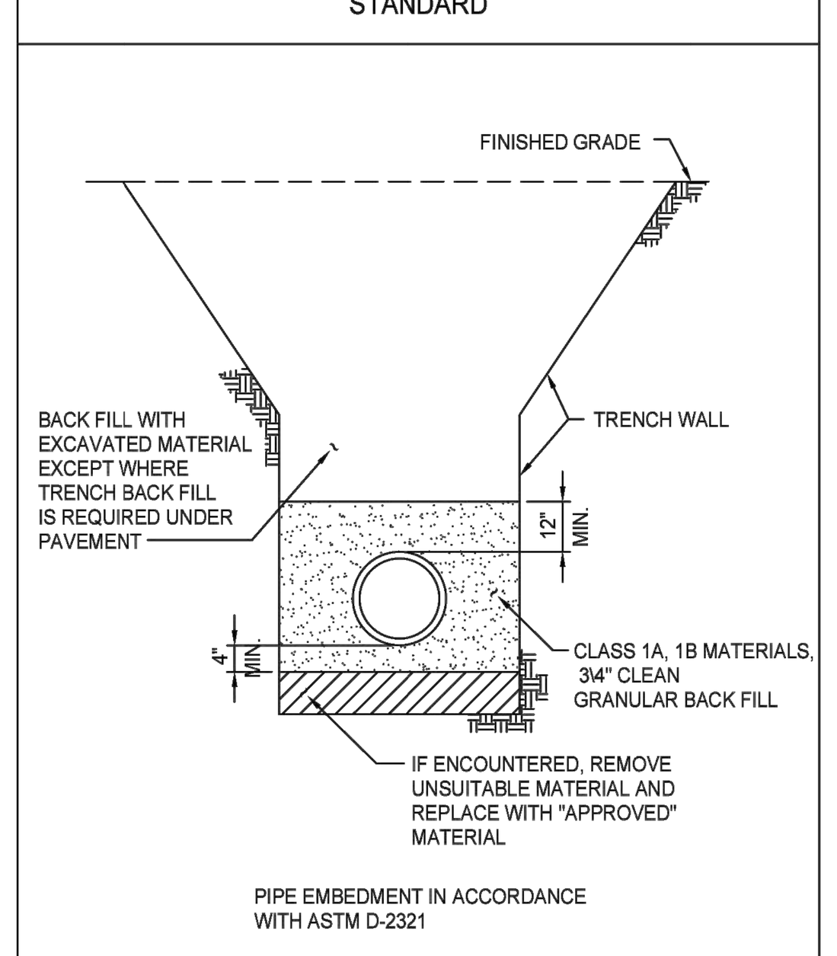
ILLINOIS-AMERICAN WATER COMPANY
STANDARD



PIPE CASING DETAIL FOR SANITARY SEWERS

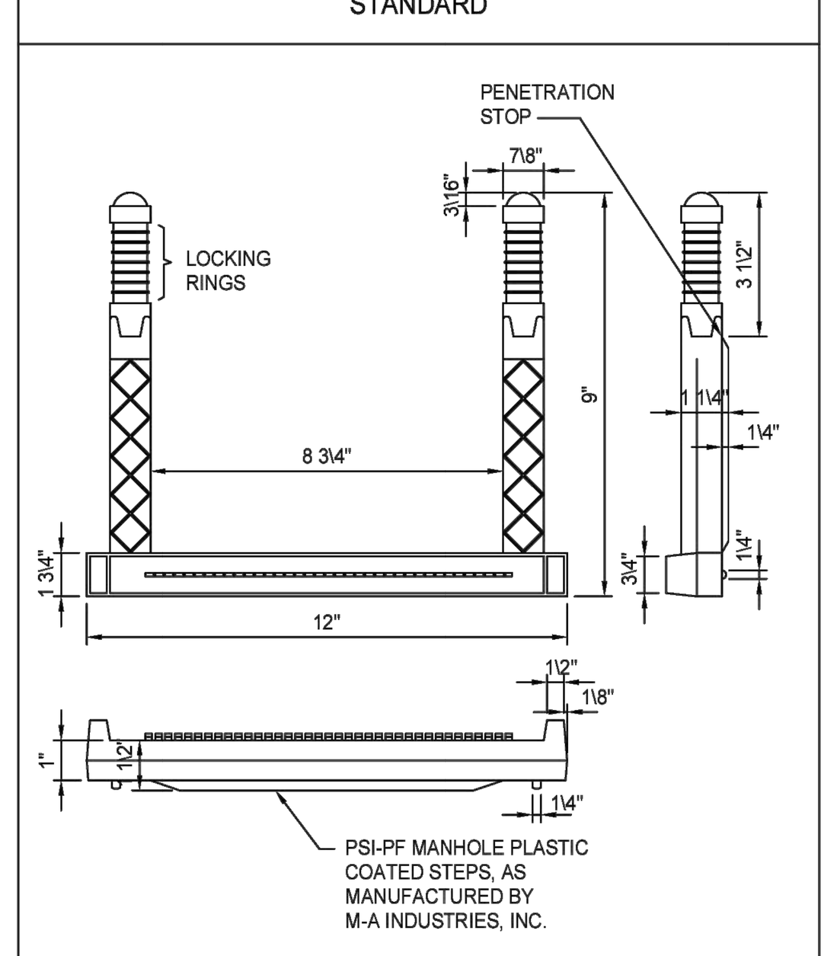
CONTACT LOCAL DISTRICT FOR MANHOLE STEPS. SOME REQUIRE STEPS AND OTHERS REQUIRE THE STEPS TO BE REMOVED.

ILLINOIS-AMERICAN WATER COMPANY
STANDARD



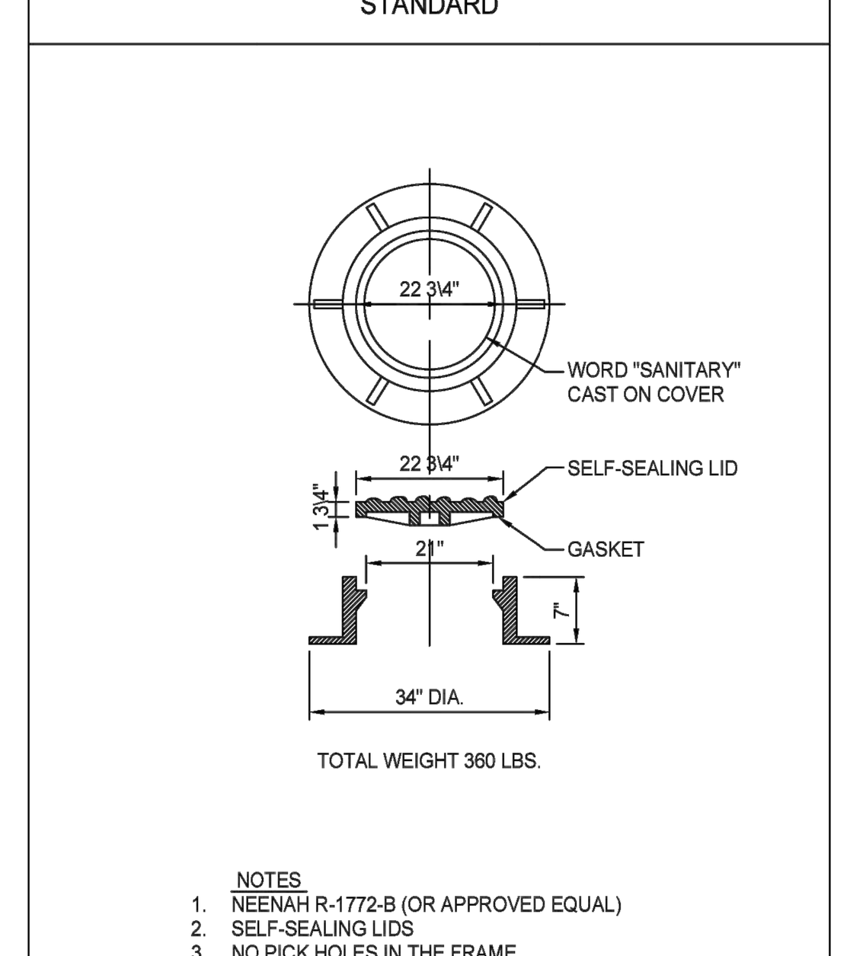
SANITARY SEWER TRENCH DETAIL

ILLINOIS-AMERICAN WATER COMPANY
STANDARD



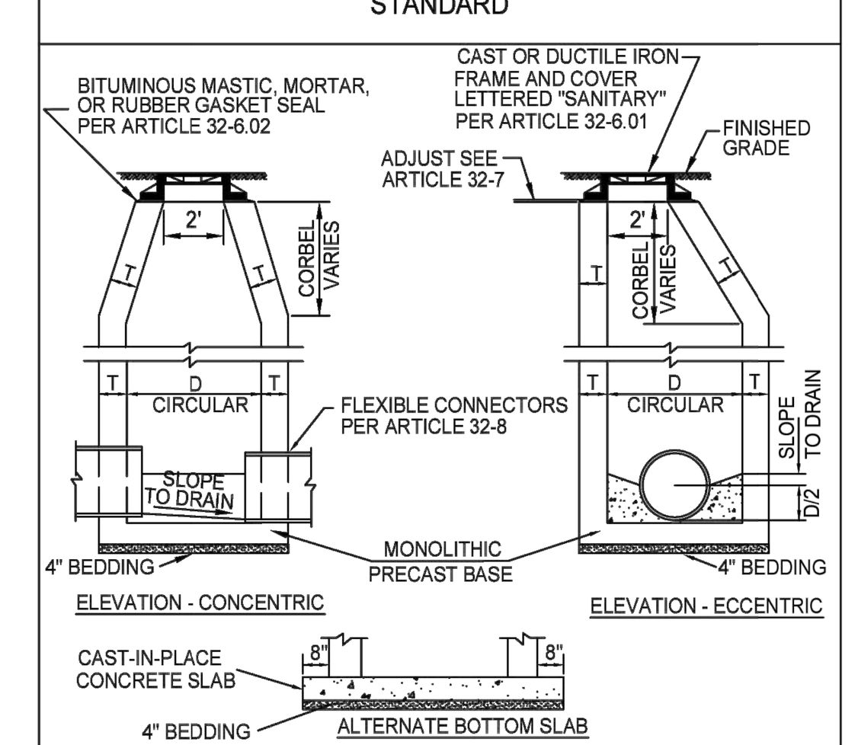
SANITARY SEWER MANHOLE STEPS

ILLINOIS-AMERICAN WATER COMPANY
STANDARD



MANHOLE FRAME WITH SOLID LID

ILLINOIS-AMERICAN WATER COMPANY
STANDARD



ALT. MATERIALS FOR WALLS	D	T (MIN.)
PRECAST REIN. CONCRETE SECT.	4 FEET 5 FEET 6 FEET	4 IN 5 IN 6 IN

NOTE: SANITARY MANHOLES SUBJECT TO SATURATED SOIL CONDITIONS OR SURFACE SUBMERGENCE SHALL BE EQUIPED WITH CHIMNEY SEALS AND WATER TIGHT MANHOLE COVERS.

STANDARD DRAWING NO.3san
REFERENCE SECTION 32 FOR SANITARY SEWER MANHOLE SPECIFICATIONS

TYPICAL SANITARY MANHOLE "A"
CHECK LOCAL REGULATIONS TO SEE IF STEPS ARE REQUIRED.

OPERATOR: MCCARRCA DWG: S:\Engineering\00-CADD\Drawing Templates\Sanitary-Storm Sewer\Standard Sanitary Sewer Plans.dwg

PROJECT: E. ALPHA STREET
STO. AND SAN. SEWER EXTENSION
DISTRICT: CITY
XXXXX DISTRICT

NO.	DATE	INIT.	REVISIONS

ILLINOIS AMERICAN WATER
ENGINEERING DEPARTMENT
201 DEVONSHIRE DRIVE
CHAMPAIGN, IL 61820

SEAL
SIGNATURE:
EXPIRATION DATE:

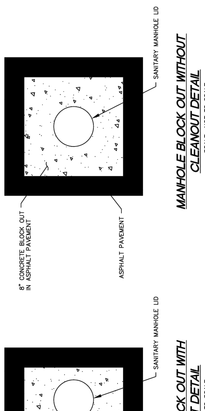
FILE	xx
JOB NO.	xxx
DATE	06/22/22
DRAWN BY	CAM
APP. BY	
SCALE	AS SHOWN
XREF	xxx
SHEET	7 OF 8

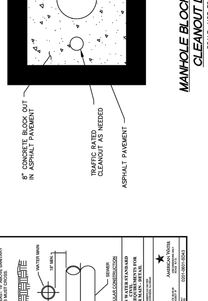
KIRBY SCHOOL DISTRICT 140
2023
NEW FERNWAY PARK ELEMENTARY SCHOOL
16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

ILLINOIS AMERICAN WATER
DETAILS

TRIA ARCHITECTURE

C13.00





DETAIL "A"
DIP - SOIL
(FOR AREAS NOT TO BE PAVED)

DETAIL "B"
DIP - SOIL
(FOR PAVED AREAS OR AREAS TO BE PAVED OR WITHIN 18" OF PAVING)

NOTES:
1. CAUTION MUST BE EXERCISED TO ENSURE PROPER PLACEMENT OF EMBEDMENT MATERIAL UNDER THE HAUNCHES OF THE PIPE. NATIVE SOIL IS ACCEPTABLE UNLESS DIRECTED BY COMPANY.
2. POLYETHYLENE ENCASING ON ALL D.I. PIPE, FITTINGS, VALVES & APPURTENANCES IN CORROSIVE SOILS.
3. SEE SPECIFICATION SECTION 02210 FOR DESCRIPTION OF BACKFILL AND BEDDING MATERIAL.

REVISIONS
06-22-09
TEXT TERM"OPTIONAL" REMOVED AND TEXT 5'-0" REPLACED WITH TEXT MIDLINE.

AMERICAN WATER STANDARD
CIVIL
TRENCH - D.I. PIPE IN SOIL
DETAIL

AMERICAN WATER
VOORHEES, NJ 08043

AMERICAN WATER ENG. CENTER
213 CARRIAGE LANE
DELRAN, NJ 08075

DRAWN BY RJB
PROJECT ENG'R
APPROVED
DATE 10-03-07
PROJECT IP

AMERICAN WATER
USE DIMENSIONS ONLY
SCALE N.T.S.

USE APPROVED DRAWINGS ONLY FOR CONSTRUCTION PURPOSES
0201-0601-SD55

SPECIAL CONSTRUCTION REQUIREMENTS
WHERE REQUIRED WATER MAIN SEPARATION FROM SEWER CANNOT BE MAINTAINED

ZONE A - PARALLEL CONSTRUCTION CLOSE TO PIPE

ZONE B - PARALLEL CONSTRUCTION AT LEAST 4' FROM PIPE

ZONE C - PERPENDICULAR ABOVE OR EVEN HORIZONTAL

ZONE D - PERPENDICULAR BELOW HORIZONTAL IF AN EXISTING SEWER IS LOCATED WITHIN THESE LIMITS. THE CONDITIONS REQUIREMENTS MAY APPLY (CONFIRM WITH REGULATOR)

IF AN EXISTING SEWER IS LOCATED WITHIN ZONES A1, A2, B, C, OR D OF A PROPOSED WATER MAIN, THE FOLLOWING SPECIAL REQUIREMENTS APPLY:

ZONE
- A. NO WATER MAINS SHALL BE CONSTRUCTED WITHOUT SPECIAL PERMISSION FROM THE APPROPRIATE HEALTH OR ENVIRONMENTAL REGULATOR.
- B. IF THE SEWER DOES NOT MEET ZONE B REQUIREMENTS, THE WATER MAIN SHALL BE OF PRESSURE CLASS 200 PIPE FOR PVC AND CLASS 350 FO D.I. PIPE. SEWER SHALL BE CONSTRUCTED EQUAL TO WATER PIPE AND TESTED FOR WATER TIGHTNESS.
- C. NO WATER MAINS SHALL BE CONSTRUCTED WITHOUT SPECIAL PERMISSION FROM THE HEALTH REGULATOR. IF PERMISSION IS GRANTED, THE SEWER PIPE SHALL BE ENCASED AND/OR REPLACED WITH WATER MAIN GRADE PIPE AND THE WATER MAIN SHALL BE OF CLASS 200 PIPE OR EQUIVALENT.

REQUIRED SEPARATION BETWEEN WATER MAINS AND SANITARY SEWERS

BASIC SEPARATION REQUIREMENTS:

WATER MAINS AND SEWERS SHOULD BE SEPARATED AS FAR AS IS REASONABLE IN BOTH THE HORIZONTAL AND VERTICAL DIRECTIONS WITH SEWERS LOWER THAN WATER MAINS.

PARALLEL CONSTRUCTION: THE HORIZONTAL DISTANCE BETWEEN PRESSURE WATER MAINS AND SEWERS SHALL BE AT LEAST 10 FEET

PERPENDICULAR CONSTRUCTION (CROSSING): PRESSURE WATER MAINS SHALL BE AT LEAST 18" ABOVE SANITARY SEWERS WHERE THESE LINES MUST CROSS.

PERPENDICULAR CONSTRUCTION

PARALLEL CONSTRUCTION

REVISIONS
06-22-09
REVISED NOTE C.
REMOVED NOTE D.
REMOVED #4 REBAR AND CONCRETE DETAIL

AMERICAN WATER STANDARD
CIVIL
SPECIAL REQUIREMENTS FOR
WATER MAIN - DETAIL

AMERICAN WATER
VOORHEES, NJ 08043

AMERICAN WATER ENGINEERING
3906 CHURCH ROAD
MOUNT LAUREL, NJ 08054

DRAWN BY RJB
PROJECT ENG'R
APPROVED
DATE 06-05-08
PROJECT IP

AMERICAN WATER
USE DIMENSIONS ONLY
SCALE N.T.S.

USE APPROVED DRAWINGS ONLY FOR CONSTRUCTION PURPOSES
0201-0601-SD43

WATER MAIN CROSSING OVER SEWER

OPTION A - PRESSURE CLASS SEWER MAIN

1. REPLACE EXISTING SEWER WITH A PRESSURE CLASS MAIN A MINIMUM OF 10' EACH SIDE OF THE WATER MAIN.

OPTION B - WATER MAIN INSTALLATION

1. MID-POINT OF ONE FULL LENGTH OF WATER MAIN IS TO BE CENTERED ABOVE SEWER LINE.
2. PROVIDE ADEQUATE SUPPORT FOR THE WATER MAIN TO PREVENT DAMAGE DUE TO SETTLEMENT.

NOTES:
1. FOLLOW TRENCH MATERIAL DETAIL WHEN BACK- FILLING WATER MAIN.
2. THE SELECTED OPTION MUST BE APPROVED BY AN IL-AWC REPRESENTATIVE.

AMERICAN WATER STANDARD
CIVIL
WATER MAIN CROSSING OVER SEWER
DETAIL

ILLINOIS AMERICAN WATER
BELLEVILLE, IL 62223

ILLINOIS AMERICAN WATER ENG.
100 N. WATER WORKS DRIVE
BELLEVILLE, IL 62223

DRAWN BY JWM
PROJECT ENG'R
APPROVED
DATE 01-05-01
PROJECT IP

AMERICAN WATER
USE DIMENSIONS ONLY
SCALE N.T.S.

USE APPROVED DRAWINGS ONLY FOR CONSTRUCTION PURPOSES
0201-0601-IH10A

4 IN LINE CLEANOUT DETAIL
Scale: -NTS-

3 END LINE CLEANOUT DETAIL
Scale: -NTS-

AMERICAN WATER STANDARD
CIVIL
TYPICAL OUTSIDE DROP CONNECTION
DETAIL

ILLINOIS AMERICAN WATER
BELLEVILLE, IL 62223

ILLINOIS AMERICAN WATER ENG.
100 N. WATER WORKS DRIVE
BELLEVILLE, IL 62223

DRAWN BY
PROJECT ENG'R
APPROVED
DATE ##-##-15
PROJECT IP

AMERICAN WATER
USE DIMENSIONS ONLY
SCALE N.T.S.

USE APPROVED DRAWINGS ONLY FOR CONSTRUCTION PURPOSES
MOAWC-WW-10

TYPICAL OUTSIDE DROP CONNECTION

AMERICAN WATER STANDARD
CIVIL
TYPICAL OUTSIDE DROP CONNECTION
DETAIL

ILLINOIS AMERICAN WATER
BELLEVILLE, IL 62223

ILLINOIS AMERICAN WATER ENG.
100 N. WATER WORKS DRIVE
BELLEVILLE, IL 62223

DRAWN BY
PROJECT ENG'R
APPROVED
DATE ##-##-15
PROJECT IP

AMERICAN WATER
USE DIMENSIONS ONLY
SCALE N.T.S.

USE APPROVED DRAWINGS ONLY FOR CONSTRUCTION PURPOSES
MOAWC-WW-10

MANHOLE BLOCK OUT WITH CLEANOUT DETAIL
SCALE: NOT TO SCALE

MANHOLE BLOCK OUT WITHOUT CLEANOUT DETAIL
SCALE: NOT TO SCALE

PROJECT
E. ALPHA STREET
STO. AND SAN. SEWER EXTENSION

DISTRICT
CITY
XXXXX DISTRICT

NO.	DATE	INIT.	REVISIONS

SEAL

SIGNATURE:
EXPIRATION DATE:

ILLINOIS
AMERICAN WATER

ENGINEERING DEPARTMENT
201 DEVONSHIRE DRIVE
CHAMPAIGN, IL 61820

FILE		xx
JOB NO.		xxx
DATE		06/22/22
DRAWN BY		CAM
APP. BY		
SCALE		AS SHOWN
XREF		xxx
SHEET	8	OF 8

OPERATOR: MCCARRCA DWG: S:\Engineering\00-CADD\Drawing Templates\Sanitary-Storm Sewer\Standard Sanitary Sewer Plans.dwg

TRIA
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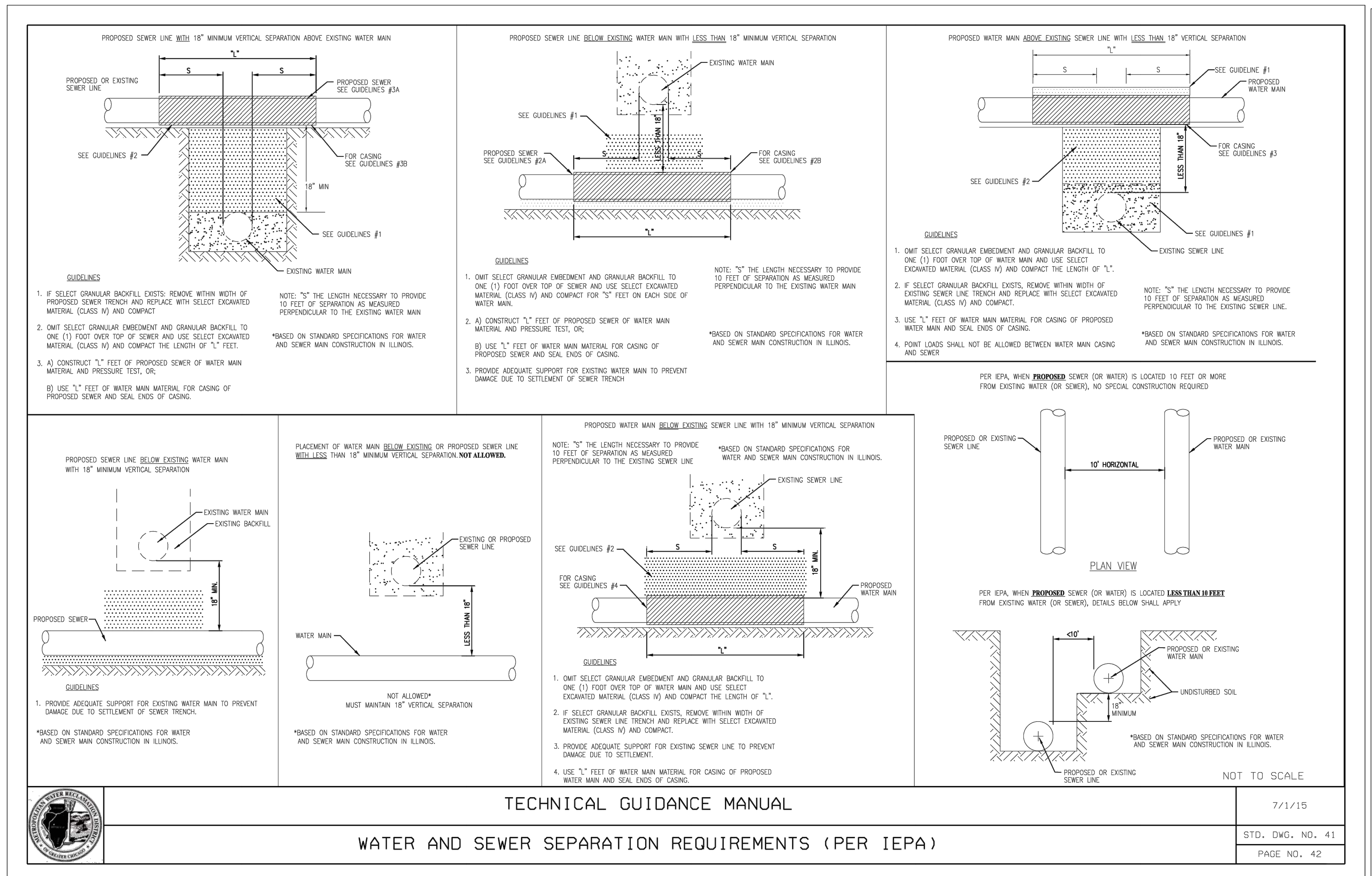
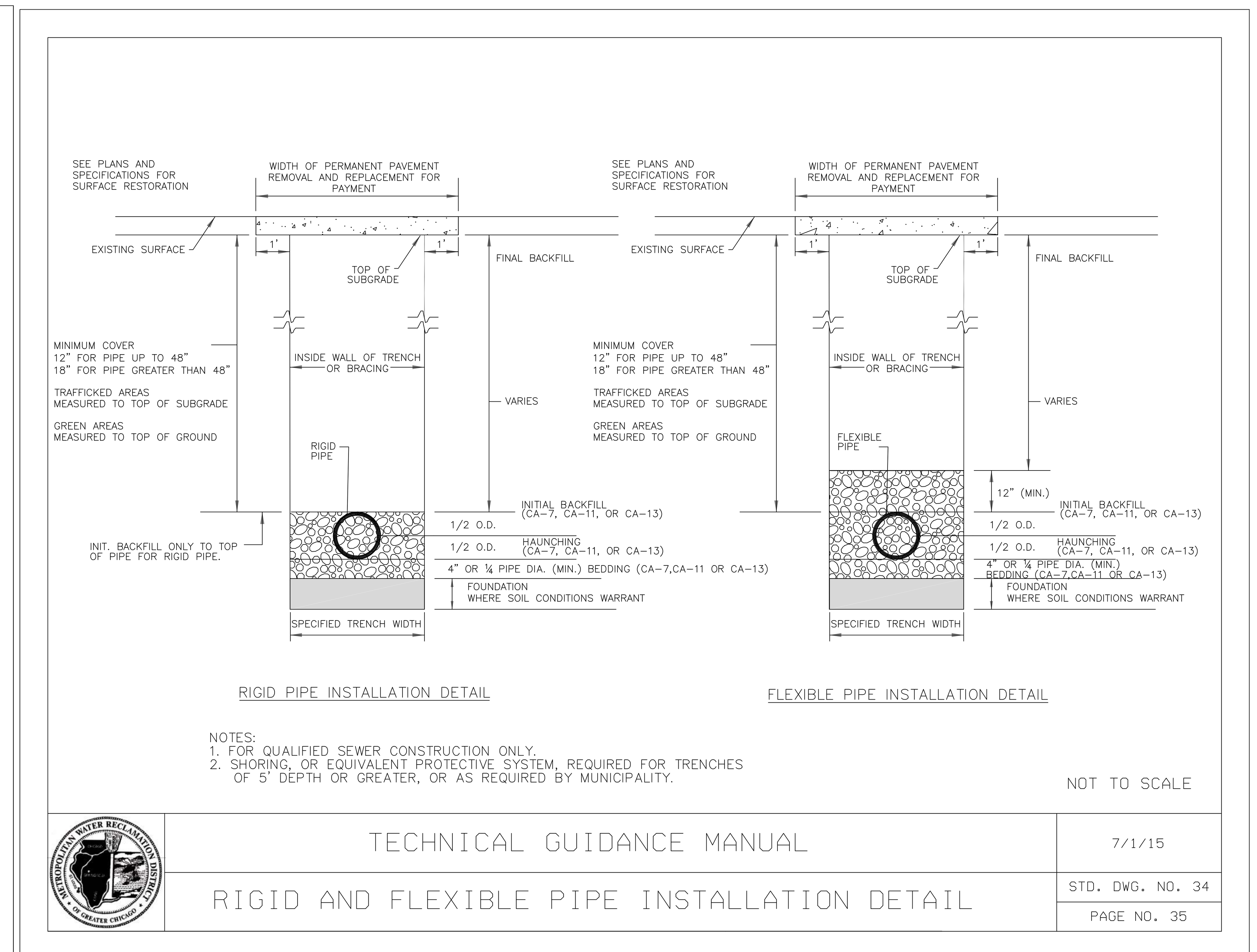
KIRBY SCHOOL DISTRICT 140
2023
NEW FERNWAY PARK ELEMENTARY SCHOOL
16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

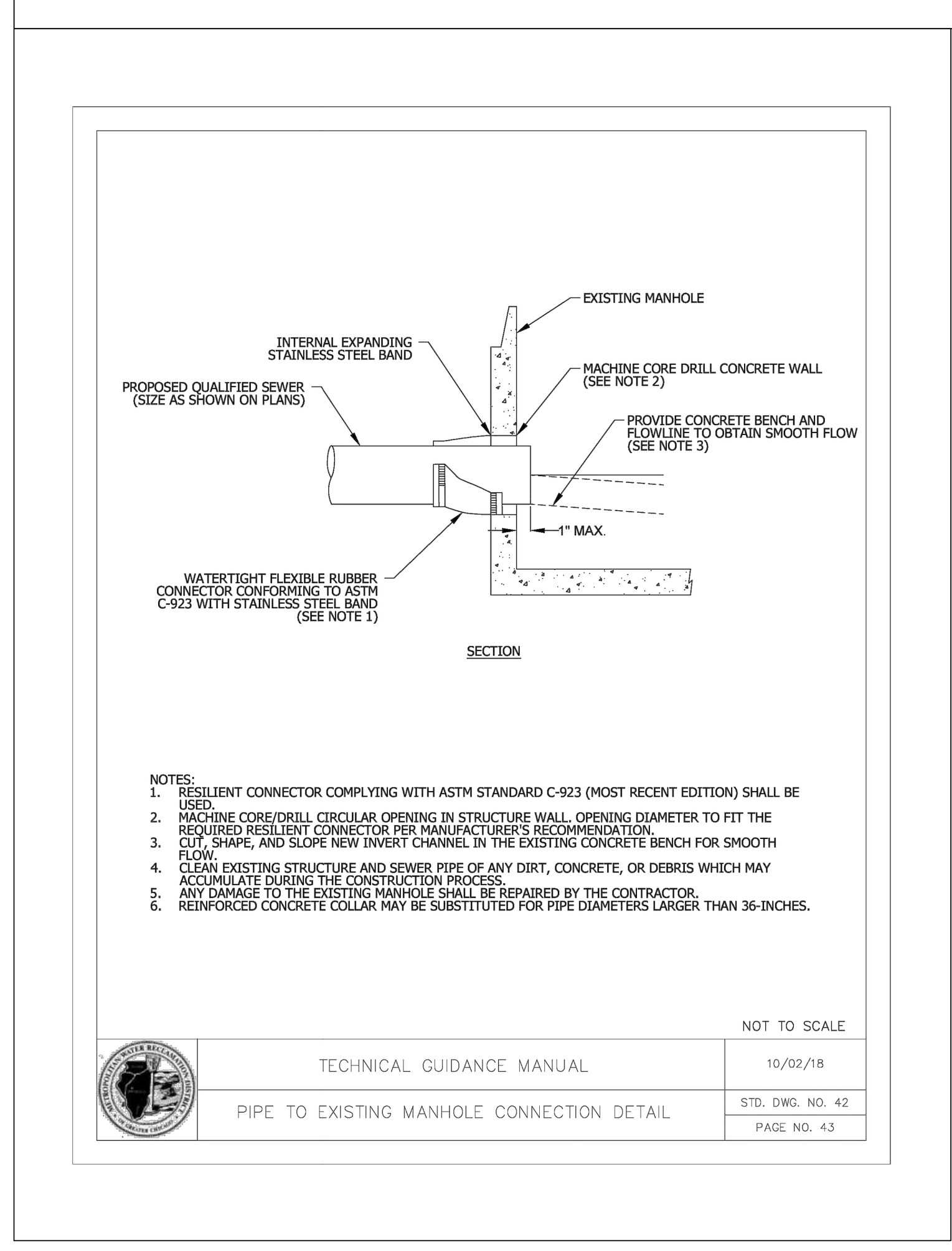
PROJECT NUMBER:	21-054.1	REVISIONS:
PROJECT MANAGER:	MG	1
DRAWN BY:		2
		3
ISSUED FOR BID:		4
10/30/2023		5

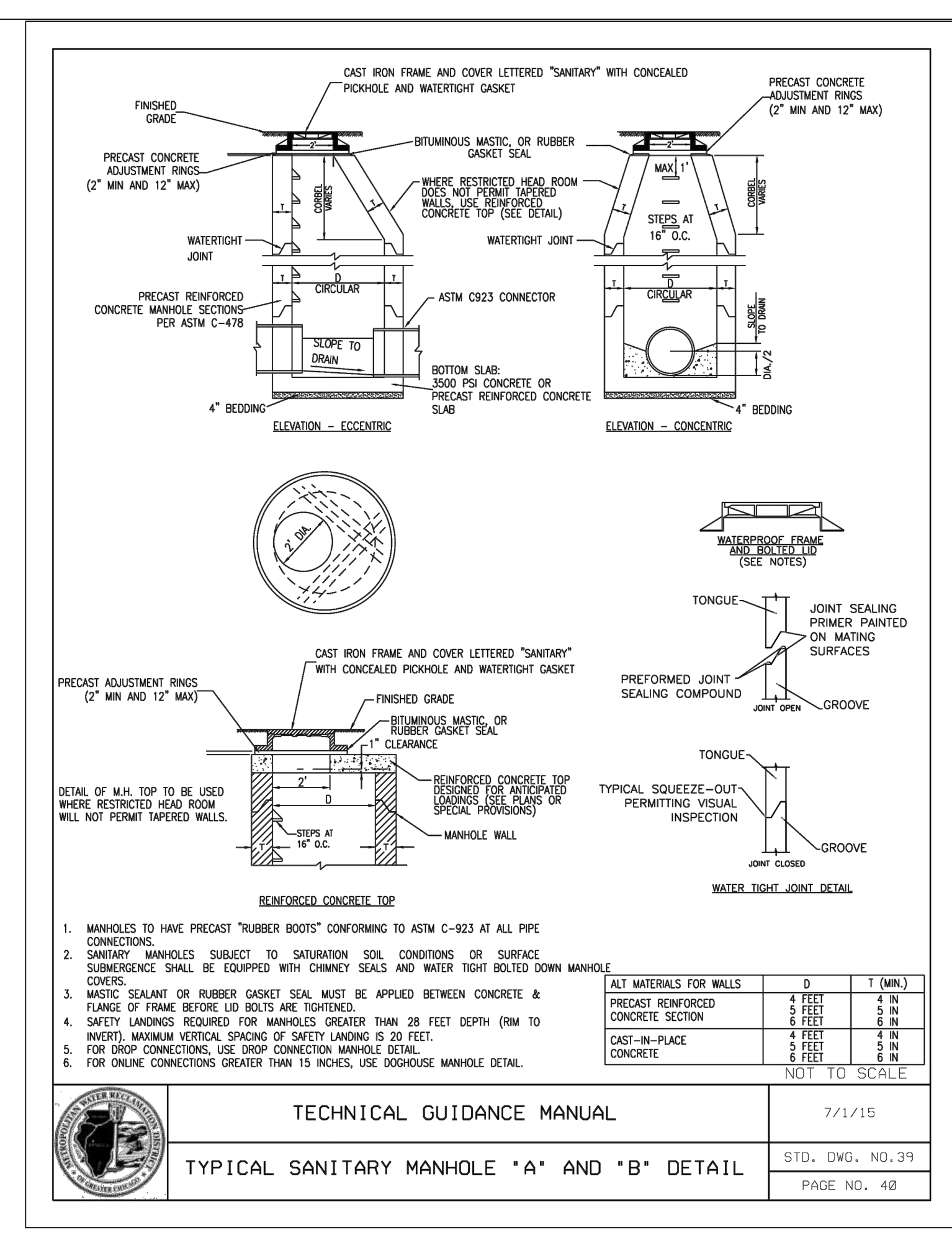
ILLINOIS AMERICAN WATER
DETAILS

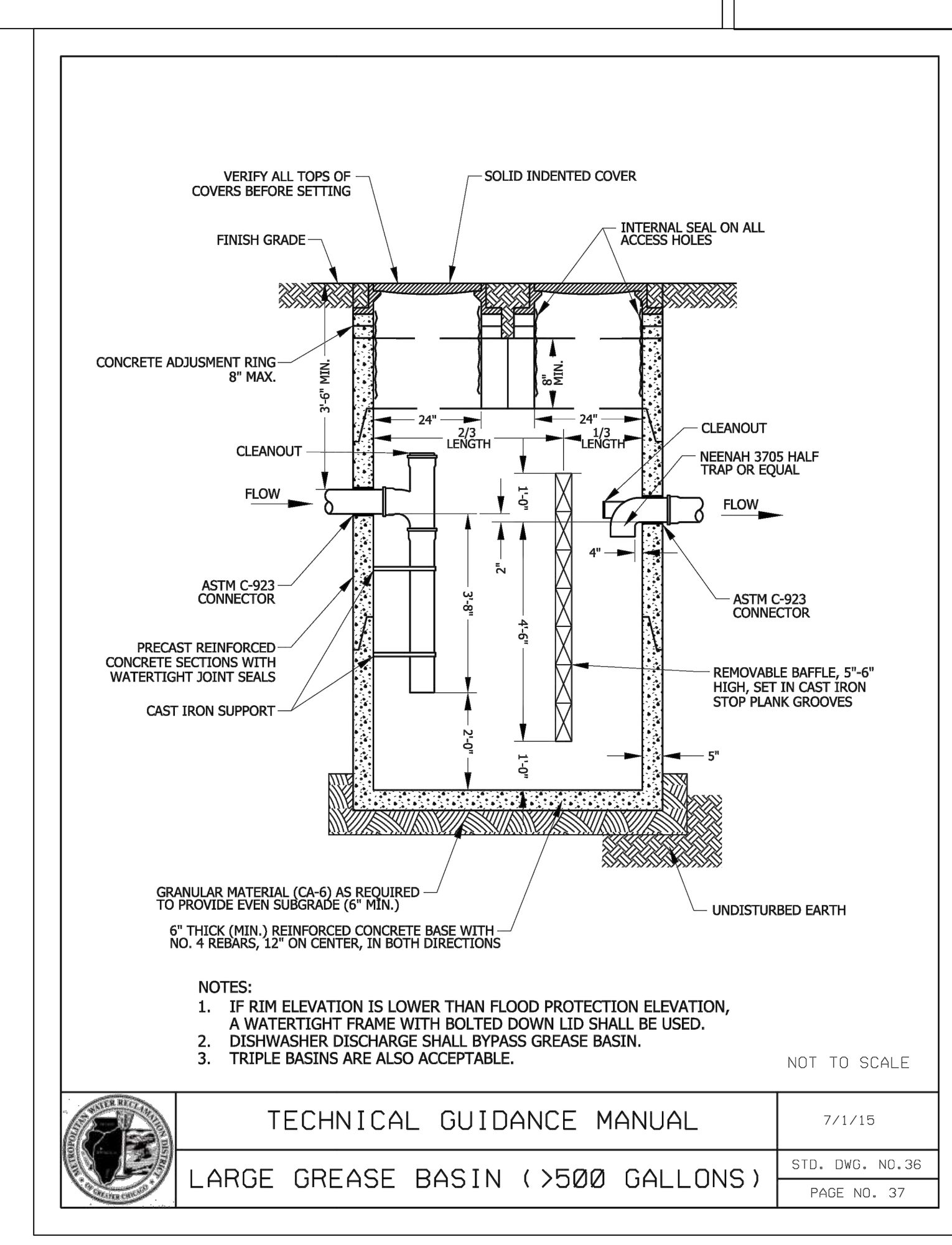
C14.00


PROPOSED SEWER LINE WITH 18" MINIMUM VERTICAL SEPARATION ABOVE EXISTING WATER MAIN
PROPOSED SEWER LINE BELOW EXISTING WATER MAIN WITH LESS THAN 18" MINIMUM VERTICAL SEPARATION
PROPOSED WATER MAIN ABOVE EXISTING SEWER LINE WITH LESS THAN 18" VERTICAL SEPARATION
PROPOSED SEWER LINE BELOW EXISTING WATER MAIN WITH 18" MINIMUM VERTICAL SEPARATION
PROPOSED WATER MAIN BELOW EXISTING SEWER LINE WITH 18" MINIMUM VERTICAL SEPARATION
PLAN VIEW
NOT TO SCALE
TECHNICAL GUIDANCE MANUAL
7/1/15
WATER AND SEWER SEPARATION REQUIREMENTS (PER IEPA)
STD. DWG. NO. 41
PAGE NO. 42


SEE PLANS AND SPECIFICATIONS FOR SURFACE RESTORATION
WIDTH OF PERMANENT PAVEMENT REMOVAL AND REPLACEMENT FOR PAYMENT
EXISTING SURFACE
TOP OF SUBGRADE
FINAL BACKFILL
MINIMUM COVER
12" FOR PIPE UP TO 48"
18" FOR PIPE GREATER THAN 48"
TRAFFICKED AREAS MEASURED TO TOP OF SUBGRADE
GREEN AREAS MEASURED TO TOP OF GROUND
INSIDE WALL OF TRENCH OR BRACING
VARIES
RIGID PIPE
FLEXIBLE PIPE
12" (MIN.)
INITIAL BACKFILL (CA-7, CA-11, OR CA-13)
1/2 O.D.
HAUNCHING (CA-7, CA-11, OR CA-13)
4" OR ¼ PIPE DIA. (MIN.) BEDDING (CA-7,CA-11 OR CA-13)
FOUNDATION WHERE SOIL CONDITIONS WARRANT
INIT. BACKFILL ONLY TO TOP OF PIPE FOR RIGID PIPE.
SPECIFIED TRENCH WIDTH
RIGID PIPE INSTALLATION DETAIL
FLEXIBLE PIPE INSTALLATION DETAIL
NOTES:
1. FOR QUALIFIED SEWER CONSTRUCTION ONLY.
2. SHORING, OR EQUIVALENT PROTECTIVE SYSTEM, REQUIRED FOR TRENCHES OF 5' DEPTH OR GREATER, OR AS REQUIRED BY MUNICIPALITY.
NOT TO SCALE
TECHNICAL GUIDANCE MANUAL
7/1/15
RIGID AND FLEXIBLE PIPE INSTALLATION DETAIL
STD. DWG. NO. 34
PAGE NO. 35






NOTES:
1. IF RIM ELEVATION IS LOWER THAN FLOOD PROTECTION ELEVATION, A WATERTIGHT FRAME WITH BOLTED DOWN LID SHALL BE USED.
2. DISHWASHER DISCHARGE SHALL BYPASS GREASE BASIN.
3. TRIPLE BASINS ARE ALSO ACCEPTABLE.
NOT TO SCALE
TECHNICAL GUIDANCE MANUAL
7/1/15
LARGE GREASE BASIN (>500 GALLONS)
STD. DWG. NO. 36
PAGE NO. 37

TRIA ARCHITECTURE

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STRUCTURAL CONSULTANT:
Larson Engineering, Inc.
MEP/FP CONSULTANT:
IDAS

KIRBY SCHOOL DISTRICT 140
2023
NEW FERNWAY PARK ELEMENTARY SCHOOL
16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

MWRD CONSTRUCTION DETAILS

C15.00

A. REFERENCED SPECIFICATIONS

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE FOLLOWING, EXCEPT AS MODIFIED HEREIN OR ON THE PLANS:
   * STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION), BY THE ILLINOIS DEPARTMENT OF TRANSPORTATION (IDOT SS) FOR ALL IMPROVEMENTS EXCEPT SANITARY SEWER AND WATER MAIN CONSTRUCTION;
   * STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST EDITION (SSWS) FOR SANITARY SEWER AND WATER MAIN CONSTRUCTION;
   * VILLAGE OF ORLAND PARK MUNICIPAL CODE;
   * THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO (MWRD) WATERSHED MANAGEMENT ORDINANCE AND TECHNICAL GUIDANCE MANUAL;
   * IN CASE OF CONFLICT BETWEEN THE APPLICABLE ORDINANCES NOTED, THE MORE STRINGENT SHALL TAKE PRECEDENCE AND SHALL CONTROL ALL CONSTRUCTION.

B. NOTIFICATIONS

1. THE MWRD LOCAL SEWER SYSTEMS SECTION FIELD OFFICE MUST BE NOTIFIED AT LEAST TWO (2) WORKING DAYS PRIOR TO THE COMMENCEMENT OF ANY WORK (CALL 708-588-4055 OR SEND EMAIL NOTIFICATION WITH PROJECT NAME, LOCATION AND PERMIT NUMBER TO WMOJOBSTART@MWRD.ORG).

2. THE VILLAGE OF ORLAND PARK ENGINEERING DEPARTMENT AND PUBLIC MUST BE NOTIFIED AT LEAST 24 HOURS PRIOR TO THE START OF CONSTRUCTION AND PRIOR TO EACH PHASE OF WORK. CONTRACTOR SHALL DETERMINE ITEMS REQUIRING INSPECTION PRIOR TO START OF CONSTRUCTION OR EACH WORK PHASE.

3. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO BEGINNING CONSTRUCTION FOR THE EXACT LOCATIONS OF UTILITIES AND FOR THEIR PROTECTION DURING CONSTRUCTION. IF EXISTING UTILITIES ARE ENCOUNTERED THAT CONFLICT IN LOCATION WITH NEW CONSTRUCTION, IMMEDIATELY NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED. CALL J.U.L.I.E. AT 1-800-892-0123.

C. GENERAL NOTES

1. ALL ELEVATIONS SHOWN ON PLANS REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). CONVERSION FACTOR IS N/A FT.

2. MWRD, THE MUNICIPALITY AND THE OWNER OR OWNER'S REPRESENTATIVE SHALL HAVE THE AUTHORITY TO INSPECT, APPROVE, AND REJECT THE CONSTRUCTION IMPROVEMENTS.

3. THE CONTRACTOR(S) SHALL INDEMNIFY THE OWNER, ENGINEER, MUNICIPALITY, MWRD, AND THEIR AGENTS, ETC., FROM ALL LIABILITY INVOLVED WITH THE CONSTRUCTION, INSTALLATION, OR TESTING OF THIS WORK ON THE PROJECT.

4. THE PROPOSED IMPROVEMENTS MUST BE CONSTRUCTED IN ACCORDANCE WITH THE ENGINEERING PLANS AS APPROVED BY MWRD AND THE MUNICIPALITY UNLESS CHANGES ARE APPROVED BY MWRD, THE MUNICIPALITY, OR AUTHORIZED AGENT. THE CONSTRUCTION DETAILS, AS PRESENTED ON THE PLANS, MUST BE FOLLOWED. PROPER CONSTRUCTION TECHNIQUES MUST BE FOLLOWED ON THE IMPROVEMENTS INDICATED ON THE PLANS.

5. THE LOCATION OF VARIOUS UNDERGROUND UTILITIES WHICH ARE SHOWN ON THE PLANS ARE FOR INFORMATION ONLY AND REPRESENT THE BEST KNOWLEDGE OF THE ENGINEER. VERIFY LOCATIONS AND ELEVATIONS PRIOR TO BEGINNING THE CONSTRUCTION OPERATIONS.

6. ANY EXISTING PAVEMENT, SIDEWALK, DRIVEWAY, ETC., DAMAGED DURING CONSTRUCTION OPERATIONS AND NOT CALLED FOR TO BE REMOVED SHALL BE REPLACED AT THE EXPENSE OF THE CONTRACTOR.

7. MATERIAL AND COMPACTION TESTING SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MUNICIPALITY, MWRD, AND OWNER.

8. THE UNDERGROUND CONTRACTOR SHALL MAKE ALL NECESSARY ARRANGEMENTS TO NOTIFY ALL INSPECTION AGENCIES.

9. ALL NEW AND EXISTING UTILITY STRUCTURES ON SITE AND IN AREAS DISTURBED DURING CONSTRUCTION SHALL BE ADJUSTED TO FINISH GRADE PRIOR TO FINAL INSPECTION.

10. RECORD DRAWINGS SHALL BE KEPT BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER AS SOON AS UNDERGROUND IMPROVEMENTS ARE COMPLETED. FINAL PAYMENTS TO THE CONTRACTOR SHALL BE HELD UNTIL THEY ARE RECEIVED. ANY CHANGES IN LENGTH, LOCATION OR ALIGNMENT SHALL BE SHOWN IN RED. ALL WYES OR BENDS SHALL BE LOCATED FROM THE DOWNSTREAM MANHOLE. ALL VALVES, B-BOXES, TEES OR BENDS SHALL BE TIED TO A FIRE HYDRANT.

D. SANITARY SEWER

1. THE CONTRACTOR SHALL TAKE MEASURES TO PREVENT ANY POLLUTED WATER, SUCH AS GROUND AND SURFACE WATER, FROM ENTERING THE EXISTING SANITARY SEWERS.

2. A WATER-TIGHT PLUG SHALL BE INSTALLED IN THE DOWNSTREAM SEWER PIPE AT THE POINT OF SEWER CONNECTION PRIOR TO COMMENCING ANY SEWER CONSTRUCTION. THE PLUG SHALL REMAIN IN PLACE UNTIL REMOVAL IS AUTHORIZED BY THE MUNICIPALITY AND/OR MWRD AFTER THE SEWERS HAVE BEEN TESTED AND ACCEPTED.

3. DISCHARGING ANY UNPOLLUTED WATER INTO THE SANITARY SEWER SYSTEM FOR THE PURPOSE OF SEWER FLUSHING OF LINES FOR THE DEFLECTION TEST SHALL BE PROHIBITED WITHOUT PRIOR APPROVAL FROM THE MUNICIPALITY OR MWRD.

4. ALL SANITARY SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS (LATEST EDITION).

5. ALL FLOOR DRAINS SHALL DISCHARGE TO THE SANITARY SEWER SYSTEM.

6. ALL DOWNSPOUTS AND FOOTING DRAINS SHALL DISCHARGE TO THE STORM SEWER SYSTEM.

7. ALL SANITARY SEWER PIPE MATERIALS AND JOINTS (AND STORM SEWER PIPE MATERIALS AND JOINTS IN A COMBINED SEWER AREA) SHALL CONFORM TO THE FOLLOWING:

PIPE MATERIAL	PIPE SPECIFICATIONS	JOINT SPECIFICATIONS
VITRIFIED CLAY PIPE	ASTM C-700	ASTM C-425
REINFORCED CONCRETE SEWER PIPE	ASTM C-76	ASTM C-443
CAST IRON SOIL PIPE	ASTM A-74	ASTM C-564
DUCTILE IRON PIPE	ANSI A21.51	ANSI A21.11
POLYVINYL CHLORIDE (PVC) PIPE		
6-INCH TO 15-INCH DIAMETER SDR 26	ASTM D-3034	ASTM D-3212
18-INCH TO 27-INCH DIAMETER F/DY=46	ASTM F-679	ASTM D-3212
HIGH DENSITY POLYETHYLENE (HDPE)	ASTM D-3350	ASTM D-3261,F-2620 (HEAT FUSION)
	ASTM D-3035	ASTM D-3212,F-477 (GASKETED)
WATER MAIN QUALITY PVC		
4-INCH TO 36-INCH	ASTM D-2241	ASTM D-3139
4-INCH TO 12-INCH	AWWA C900	ASTM D-3139
14-INCH TO 48-INCH	AWWA C905	ASTM D-3139

THE FOLLOWING MATERIALS ARE ALLOWED ON A QUALIFIED BASIS SUBJECT TO DISTRICT REVIEW AND APPROVAL PRIOR TO PERMIT ISSUANCE. A SPECIAL CONDITION WILL BE ADDED TO THE PERMIT WHEN THE PIPE MATERIAL BELOW IS USED FOR SEWER CONSTRUCTION OR A CONNECTION IS MADE.

PIPE MATERIAL	PIPE SPECIFICATIONS	JOINT SPECIFICATIONS
POLYPROPYLENE (PP) PIPE		
12-INCH TO 24-INCH DOUBLE WALL	ASTM F-2736	D-3212, F-477
30-INCH TO 60-INCH TRIPLE WALL	ASTM F-2764	D3212, F-477

8. ALL SANITARY SEWER CONSTRUCTION (AND STORM SEWER CONSTRUCTION IN COMBINED SEWER AREAS), REQUIRES STONE BEDDING WITH STONE ¼ " TO 1" IN SIZE, WITH MINIMUM BEDDING THICKNESS EQUAL TO ¼ THE OUTSIDE DIAMETER OF THE SEWER PIPE, BUT NOT LESS THAN FOUR (4) INCHES NOR MORE THAN EIGHT (8) INCHES. MATERIAL SHALL BE CA-7, CA-11 OR CA-13 AND SHALL BE EXTENDED AT LEAST 12" ABOVE THE TOP OF THE PIPE WHEN USING PVC.

9. NON-SHEAR FLEXIBLE-TYPE COUPLINGS SHALL BE USED IN THE CONNECTION OF SEWER PIPES OF DISSIMILAR PIPE MATERIALS.

10. ALL MANHOLES SHALL BE PROVIDED WITH BOLTED, WATERTIGHT COVERS. SANITARY LIDS SHALL BE CONSTRUCTED WITH A CONCEALED PICKHOLE AND WATERTIGHT GASKET WITH THE WORD "SANITARY" CAST INTO THE LID.

11. WHEN CONNECTING TO AN EXISTING SEWER MAIN BY MEANS OTHER THAN AN EXISTING WYE, TEE, OR AN EXISTING MANHOLE, ONE OF THE FOLLOWING METHODS SHALL BE USED:
    a) A CIRCULAR SAW-CUT OF SEWER MAIN BY PROPER TOOLS ("SHEWER-TAP" MACHINE OR SIMILAR) AND PROPER INSTALLATION OF HUBWYE SADDLE OR HUB-TEE SADDLE.
    b) REMOVE AN ENTIRE SECTION OF PIPE (BREAKING ONLY THE TOP OF ONE BELL) AND REPLACE WITH A WYE OR TEE BRANCH SECTION.
    c) WITH PIPE CUTTER, NEATLY AND ACCURATELY CUT OUT DESIRED LENGTH OF PIPE FOR INSERTION OF PROPER FITTING, USING "BAND SEAL" OR SIMILAR COUPLINGS TO HOLD IT FIRMLY IN PLACE.

12. WHENEVER A SANITARY/COMBINED SEWER CROSSES UNDER A WATERMAIN, THE MINIMUM VERTICAL DISTANCE FROM THE TOP OF THE SEWER TO THE BOTTOM OF THE WATERMAIN SHALL BE 18 INCHES. FURTHERMORE, A MINIMUM HORIZONTAL DISTANCE OF 10 FEET BETWEEN SANITARY/COMBINED SEWERS AND WATERMAINS SHALL BE MAINTAINED UNLESS: THE SEWER IS LAID IN A SEPARATE TRENCH, KEEPING A MINIMUM 18" VERTICAL SEPARATION; OR THE SEWER IS LAID IN THE SAME TRENCH WITH THE WATERMAIN LOCATED AT THE OPPOSITE SIDE ON A BENCH OF UNDISTURBED EARTH, KEEPING A MINIMUM 18" VERTICAL SEPARATION. IF EITHER THE VERTICAL OR HORIZONTAL DISTANCES DESCRIBED CANNOT BE MAINTAINED, OR THE SEWER CROSSES ABOVE THE WATER MAIN, THE SEWER SHALL BE CONSTRUCTED TO WATER MAIN STANDARDS OR IT SHALL BE ENCASED WITH A WATER MAIN QUALITY CARRIER PIPE WITH THE ENDS SEALED.

13. ALL EXISTING SEPTIC SYSTEMS SHALL BE ABANDONED. ABANDONED TANKS SHALL BE FILLED WITH GRANULAR MATERIAL OR REMOVED.

14. ALL SANITARY MANHOLES, (AND STORM MANHOLES IN COMBINED SEWER AREAS), SHALL HAVE A MINIMUM INSIDE DIAMETER OF 48 INCHES, AND SHALL BE CAST IN PLACE OR PRE-CAST REINFORCED CONCRETE.

15. ALL SANITARY MANHOLES, (AND STORM MANHOLES IN COMBINED SEWER AREAS), SHALL HAVE PRECAST "RUBBER BOOTS" THAT CONFORM TO ASTM C-923 FOR ALL PIPE CONNECTIONS. PRECAST SECTIONS SHALL CONSIST OF MODIFIED GROOVE TONGUE AND RUBBER GASKET TYPE JOINTS.

16. ALL ABANDONED SANITARY SEWERS SHALL BE PLUGGED AT BOTH ENDS WITH AT LEAST 2 FEET LONG NON-SHRINK CONCRETE OR MORTAR PLUG.

17. EXCEPT FOR FOUNDATION/FOOTING DRAINS PROVIDED TO PROTECT BUILDINGS, OR PERFORATED PIPES ASSOCIATED WITH VOLUME CONTROL FACILITIES, DRAIN TILES/FIELD TILES/UNDERDRAINS/PERFORATED PIPES ARE NOT ALLOWED TO BE CONNECTED TO OR TRIBUTARY TO COMBINED SEWERS, SANITARY SEWERS, OR STORM SEWERS TRIBUTARY TO COMBINED SEWERS IN COMBINED SEWER AREAS. CONSTRUCTION OF NEW FACILITIES OF THIS TYPE IS PROHIBITED; AND ALL EXISTING DRAIN TILES AND PERFORATED PIPES ENCOUNTERED WITHIN THE PROJECT AREA SHALL BE PLUGGED OR REMOVED, AND SHALL NOT BE CONNECTED TO COMBINED SEWERS, SANITARY SEWERS, OR STORM SEWERS TRIBUTARY TO COMBINED SEWERS.

18. A BACKFLOW PREVENTER IS REQUIRED FOR ALL DETENTION BASINS TRIBUTARY TO COMBINED SEWERS. REQUIRED BACKFLOW PREVENTERS SHALL BE INSPECTED AND EXERCISED ANNUALLY BY THE PROPERTY OWNER TO ENSURE PROPER OPERATION, AND ANY NECESSARY MAINTENANCES SHALL BE PERFORMED TO ENSURE FUNCTIONALITY. IN THE EVENT OF A SEWER SURCHARGE INTO AN OPEN DETENTION BASIN TRIBUTARY TO COMBINED SEWERS, THE PERMITTEE SHALL ENSURE THAT CLEAN UP AND WASH OUT OF SEWAGE TAKES PLACE WITHIN 48 HOURS OF THE STORM EVENT.

E. EROSION AND SEDIMENT CONTROL

1. THE CONTRACTOR SHALL INSTALL THE EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.

2. EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE FUNCTIONAL PRIOR TO HYDROLOGIC DISTURBANCE OF THE SITE.

3. ALL DESIGN CRITERIA, SPECIFICATIONS, AND INSTALLATION OF EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE IN ACCORDANCE WITH THE ILLINOIS URBAN MANUAL.

4. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

5. INSPECTIONS AND DOCUMENTATION SHALL BE PERFORMED, AT A MINIMUM:
   a) UPON COMPLETION OF INITIAL EROSION AND SEDIMENT CONTROL MEASURES, PRIOR TO ANY SOIL DISTURBANCE.
   b) ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT WITH GREATER THAN 0.5 INCH OF RAINFALL OR LIQUID EQUIVALENT PRECIPITATION.

6. SOIL DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER AS TO MINIMIZE EROSION. IF STRIPPING, CLEARING, GRADING, OR LANDSCAPING ARE TO BE DONE IN PHASES, THE CO-PERMITTEE SHALL PLAN FOR APPROPRIATE SOIL EROSION AND SEDIMENT CONTROL MEASURES.

7. A STABILIZED MAT OF CRUSHED STONE MEETING THE STANDARDS OF THE ILLINOIS URBAN MANUAL SHALL BE INSTALLED AT ANY POINT WHERE TRAFFIC WILL BE ENTERING OR LEAVING A CONSTRUCTION SITE. SEDIMENT OR SOIL REACHING AN IMPROVED PUBLIC RIGHT-OF-WAY, STREET, ALLEY OR PARKING AREA SHALL BE REMOVED BY SCRAPING OR STREET CLEANING AS ACCUMULATIONS WARRANT AND TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA.

8. CONCRETE WASHOUT FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE ILLINOIS URBAN MANUAL AND SHALL BE INSTALLED PRIOR TO ANY ON SITE CONSTRUCTION ACTIVITIES INVOLVING CONCRETE.

9. MORTAR WASHOUT FACILITIES SHALL BE CONSTRUCTED IN ADDITION TO CONCRETE WASHOUT FACILITIES FOR ANY BRICK AND MORTAR BUILDING ENVELOPE CONSTRUCTION ACTIVITIES.

10. TEMPORARY DIVERSIONS SHALL BE CONSTRUCTED AS NECESSARY TO DIRECT ALL RUNOFF FROM HYDROLOGICALLY DISTURBED AREAS TO AN APPROPRIATE SEDIMENT TRAP OR BASIN. VOLUME CONTROL FACILITIES SHALL NOT BE USED AS TEMPORARY SEDIMENT BASINS.

11. DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT MEASURES WITHIN SEVEN (7) DAYS.

12. ALL FLOOD PROTECTION AREAS AND VOLUME CONTROL FACILITIES SHALL, AT A MINIMUM, BE PROTECTED WITH A DOUBLE-ROW OF SILT FENCE (OR EQUIVALENT).

13. VOLUME CONTROL FACILITIES SHALL NOT BE CONSTRUCTED UNTIL ALL OF THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

14. SOIL STOCKPILES SHALL, AT A MINIMUM, BE PROTECTED WITH PERIMETER SEDIMENT CONTROLS. SOIL STOCKPILES SHALL NOT BE PLACED IN FLOOD PROTECTION AREAS OR THEIR BUFFERS.

15. EARTHEN EMBANKMENT SIDE SLOPES SHALL BE STABILIZED WITH APPROPRIATE EROSION CONTROL BLANKET.

16. STORM SEWERS THAT ARE OR WILL BE FUNCTIONING DURING CONSTRUCTION SHALL BE PROTECTED BY APPROPRIATE SEDIMENT CONTROL MEASURES.

17. THE CONTRACTOR SHALL EITHER REMOVE OR REPLACE ANY EXISTING DRAIN TILES AND INCORPORATE THEM INTO THE DRAINAGE PLAN FOR THE DEVELOPMENT. DRAIN TILES CANNOT BE TRIBUTARY TO A SANITARY OR COMBINED SEWER. DRAIN TILES ALLOWED IN COMBINED SEWER AREA FOR GREEN INFRASTRUCTURE PRACTICES.

18. IF DEWATERING SERVICES ARE USED, ADJOINING PROPERTIES AND DISCHARGE LOCATIONS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION. DEWATERING SYSTEMS SHOULD BE INSPECTED DAILY DURING OPERATIONAL PERIODS. THE SITE INSPECTOR MUST BE PRESENT AT THE COMMENCEMENT OF DEWATERING ACTIVITIES.

19. THE CONTRCTOR SHALL BE RESPONSIBLE FOR TRENCH DEWATERING AND EXCAVATION FOR THE INSTALLATION OF SANITARY SEWERS, STORM SEWERS, WATERMAINS AS WELL AS THEIR SERVICES AND OTHER APPURTENANCES. ANY TRENCH DEWATERING, WHICH CONTAINS SEDIMENT SHALL PASS THROUGH A SEDIMENT SETTLING POND OR EQUALLY EFFECTIVE SEDIMENT CONTROL DEVICE. ALTERNATIVES MAY INCLUDE DEWATERING INTO A SUMP PIT, FILTER BAG OR EXISTING VEGETATED UPSLOPE AREA. SEDIMENT LADEN WATERS SHALL NOT BE DISCHARGE TO WATERWAYS, FLOOD PROTECTION AREAS OR THE COMBINED SEWER SYSTEM.

20. ALL PERMANENT EROSION CONTROL PRACTICES SHALL BE INITIATED WITHIN SEVEN (7) DAYS FOLLOWING THE COMPLETION OF SOIL DISTURBING ACTIVITIES.

21. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED AND REPAIRED AS NEEDED ON A YEAR-ROUND BASIS DURING CONSTRUCTION AND ANY PERIODS OF CONSTRUCTION SHUTDOWN UNTIL PERMANENT STABILIZATION IS ACHIEVED.

22. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN THIRTY (30) DAYS AFTER PERMANENT SITE STABILIZATION.

23. THE EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE PLANS ARE THE MINIMUM REQUIREMENTS. ADDITIONAL MEASURES MAY BE REQUIRED, AS DIRECTED BY THE ENGINEER, SITE INSPECTOR, OR MWRD.

Maintenance and Monitoring Plans for:
Fernway Park Elementary School
16600 South 88th Avenue
Village of Orland Park, Illinois

October 7, 2022

This Maintenance and Monitoring Plan is prepared in compliance with the Metropolitan Water Reclamation District of Greater Chicago (MWRD) Watershed Maintenance Ordinance (WMO). The plan outlines the maintenance tasks, the party responsible for performing the tasks and the facilities that shall be maintained.

Responsible parties performing inspections:

Property Owner:
Kirby School District 140
16931 South Grissom Drive
Tinley Park, IL 60477
(708) 532-6462

Maintenance Company Performing Inspections:
Property Owner may contract out inspections and maintenance activities to a property maintenance company. In the absence of a maintenance company, the Property Owner shall conduct the necessary inspections and perform the required maintenance.

Purpose and Objective

The stormwater management facilities have been designed to prevent an increase in stormwater leaving the site due to the development. Adherence to the maintenance plan should keep the stormwater management facilities functioning as designed and prevent emergency actions during storm events. The plan as follows is presented as a guide for initiating and developing an overall Maintenance and Monitoring Plan.

Maintenance Considerations

Cleaning and repairing storm sewers, outflow pipes and manholes is to be particularly guarded inasmuch as those elements are not visually obvious as are the surface area elements. If these subsurface elements become clogged, then water may flood the pavement surface and may cause extensive damage or water flow blockage. It is therefore stated that storm sewer and manhole cleaning be made a routine maintenance activity which should be scheduled as indicated herein and on an as-needed basis. Experience will show the required cleaning frequencies for specific drainage items.

Record Keeping

The Owner shall keep an updated logbook documenting the performance of the required Maintenance and Monitoring activities in perpetuity. The logbook shall include the dates of maintenance visits, facility components inspected and any maintenance performed and/or repairs made.

Employee Training

Company/individual in charge of on-site inspections shall annually review inspection procedures and practices with the Owner of the property. The Owner and maintenance personnel shall review procedures and practices to assure conformance with the WMO, latest edition.

Maintenance Program

General
- Litter and debris shall be controlled, collected and disposed.
- Accumulated sediment shall be disposed of as landscape/yard waste, along with any wastes generated during maintenance operations.
- As needed keep landscaped areas adjacent to the turf well maintained to prevent soil from being transported and deposited onto the turf.
- Pest control measures shall be implemented to address insects and rodents.
- Access routes including roadways and sidewalks shall be inspected annually and maintained as needed.

Storm Sewer Pipe, Drainage Structure
- Debris should be removed from storm grates and disposed as landscape/yard waste monthly and after storm events.
- Storm structures should be cleaned of floating debris and disposed of properly on a semiannual basis.
- Inspect and clean storm sewers, underdrains and control structures semi-annually.
- As needed, removal of sediment and debris from catch basins when the sediment has accumulated to more than 50% of basin sump. Sediments should be tested for toxicants in compliance with applicable disposal requirements.
- Sewer maintenance must meet OSHA confined space entry requirements, which includes clearly marking entrances to confined space areas.

Vegetated Areas
- Regular mowing to control vegetation, no cutting native vegetation
- Need for planting, reseeding or sodding. Supplement alternative native vegetation if a significant portion has not established (50% of the surface area). Reseed with alternative grass species if original grass cover has not successfully established.
- Evidence of grazing, motorbikes or other vehicles, repair
- Check for invasive vegetation, remove where possible

Permeable Paver Maintenance
- Routine inspections and maintenance of volume control facilities shall be performed by the Owner on a yearly or as-needed basis. Specific items of concern include:
  - Facility shall be inspected yearly using the monitoring well to verify the system is functioning properly.
  - Surface of permeable pavement shall be cleaned with low-pressure power washer.
  - Accumulated sediment from surface shall be vacuumed out and disposed of properly.
  - Appropriate signage shall be repaired if damage or illegible.

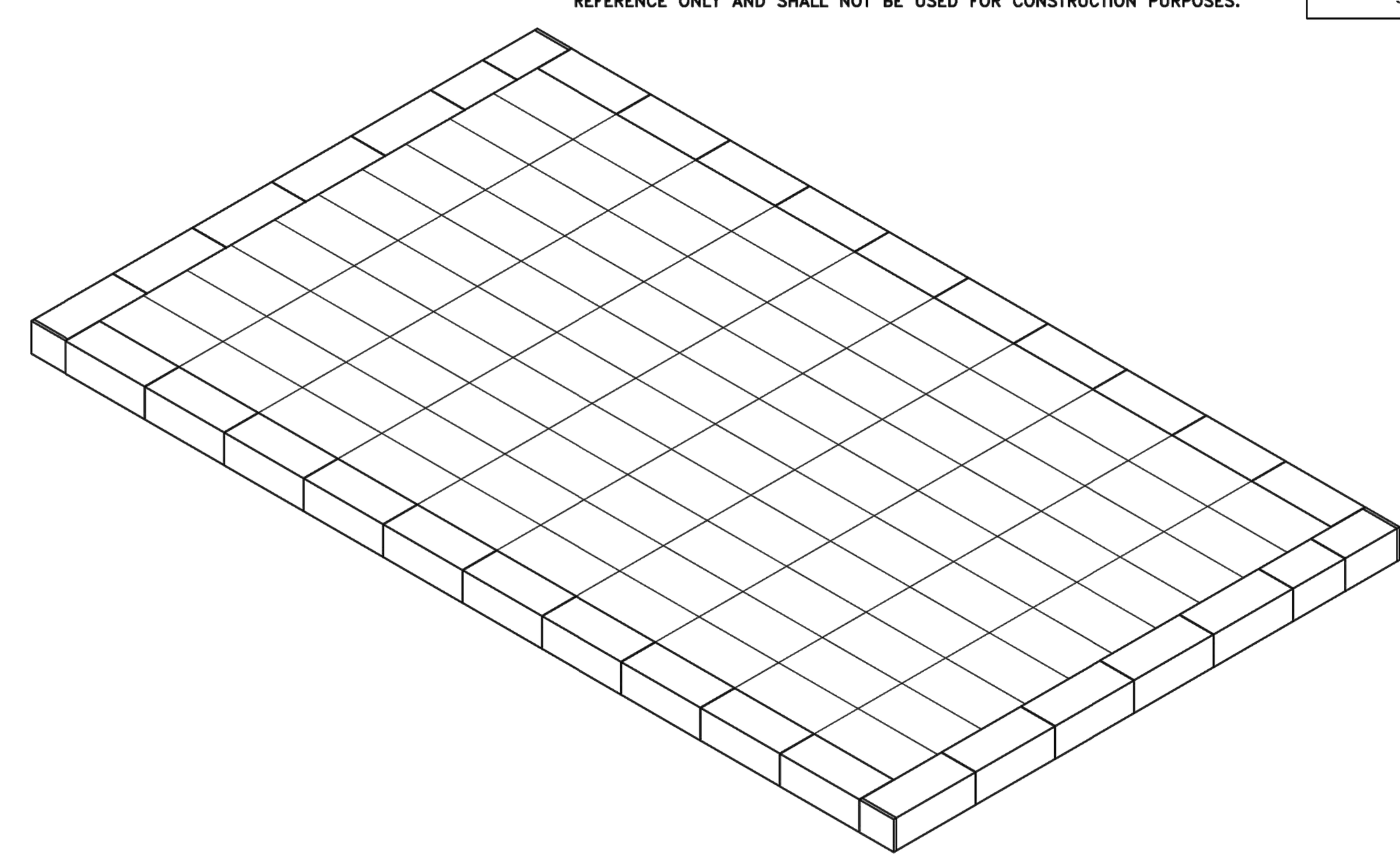
Bioretention Facility
- Inspect all stormwater detention facilities to ensure that the constructed volume for detention is maintained. No sediment, topsoil, or other dumping into the facility shall be allowed. Specific locations in the stormwater management system, designed to accumulate sediment, shall be dredged as necessary to prevent sediment from reaching the invert of any gravity outlet pipe.
- Routine inspections and maintenance of volume control facilities shall be performed by the Owner on a yearly or as-needed basis. Specific items of concern include:
  - Facility shall be inspected yearly using the monitoring well to verify the system is functioning properly.
  - Accumulated sediment from surface shall be vacuumed out and disposed of properly.

Qualified Sewer Construction
- Perform manhole inspections once every five years, make repairs as necessary.
- Perform sewer inspections once every five years, make repairs as necessary.
- Perform regular cleaning so that each sewer segment is cleaned once every 5 years.
- Remove any obstructions placed in maintenance easements that may impede maintenance equipment access.

TRIA ARCHITECTURE
KIRBY SCHOOL DISTRICT 140
2023
NEW FERNWAY PARK ELEMENTARY SCHOOL
16600 S. 88TH AVENUE, ORLAND PARK, IL 60462
MWRD GENERAL NOTES
C16.00

StormTrap®

MODULAR CONCRETE STORMWATER MANAGEMENT



THE STORMTRAP DRAWINGS SHALL NOT BE ALTERED OR MANIPULATED IN WHOLE OR IN PART WITHOUT WRITTEN CONSENT OF STORMTRAP. USE OF THESE DRAWINGS IS STRICTLY GRANTED TO YOU, OUR CLIENT, FOR THE SPECIFIED AND NAMED PROJECT ONLY. **THESE DRAWINGS ARE FOR YOUR REFERENCE ONLY AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES.**

FERNWAY PARK ELEMENTARY - POND B EAST BASIN
ORLAND PARK, IL

SHEET INDEX

PAGE	DESCRIPTION
0.0	COVER SHEET
1.0	SINGLETRAP DESIGN CRITERIA
2.0	SINGLETRAP SYSTEM LAYOUT
3.0	SINGLETRAP INSTALLATION SPECIFICATIONS
3.1	SINGLETRAP INSTALLATION SPECIFICATIONS
4.0	SINGLETRAP BACKFILL SPECIFICATIONS
5.0	RECOMMENDED PIPE/ACCESS OPENING SPECIFICATIONS
6.0	SPLASH PAD & GEOWEB DETAILS
7.0	SINGLETRAP MODULE TYPES

STORMTRAP CONTACT INFORMATION

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CONTACT NAME: BRIAN RIEGER
CELL PHONE: 815-258-1261
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PROJECT INFORMATION:
FERNWAY PARK ELEMENTARY
POND B EAST BASIN
ORLAND PARK, IL

CURRENT ISSUE DATE: 6/16/2023

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2	6/16/2023	PRELIMINARY	JPH
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SCALE: NTS

SHEET TITLE: COVER SHEET

SHEET NUMBER: 0.0

STRUCTURAL DESIGN LOADING CRITERIA

LIVE LOADING: **AASHTO HS-20 HIGHWAY LOADING**
GROUND WATER TABLE: 701.50
SOIL BEARING PRESSURE: 4000PSF
SOIL DENSITY: 120 PCF
EQUIVALENT UNSATURATED LATERAL ACTIVE EARTH PRESSURE: 35 PSF / FT.
EQUIVALENT SATURATED LATERAL ACTIVE EARTH PRESSURE: 80 PSF/FT. (IF WATER TABLE PRESENT)
APPLICABLE CODES: ASTM C857, ACI-318
BACKFILL TYPE: SEE SHEET 4.0 FOR BACKFILL OPTIONS

STORMTRAP SYSTEM INFORMATION

UNIT HEADROOM: 5'-0" SINGLETRAP

SITE SPECIFIC DESIGN CRITERIA

1. STORMTRAP UNITS SHALL BE MANUFACTURED AND INSTALLED ACCORDING TO SHOP DRAWINGS APPROVED BY THE INSTALLING CONTRACTOR AND ENGINEER OF RECORD. THE SHOP DRAWINGS SHALL INDICATE SIZE AND LOCATION OF ROOF OPENINGS AND INLET/ OUTLET PIPE TYPES, SIZES, INVERT ELEVATIONS AND SIZE OF OPENINGS.
2. COVER RANGE: MIN. 1.00' MAX. 3.00' CONSULT STORMTRAP FOR ADDITIONAL COVER OPTIONS.
3. ALL DIMENSIONS AND SOIL CONDITIONS, INCLUDING BUT NOT LIMITED TO GROUNDWATER AND SOIL BEARING CAPACITY ARE REQUIRED TO BE VERIFIED IN THE FIELD BY OTHERS PRIOR TO STORMTRAP INSTALLATION.
4. FOR STRUCTURAL CALCULATIONS THE GROUND WATER TABLE IS ASSUMED TO BE 701.50 IF WATER TABLE IS DIFFERENT THAN ASSUMED, CONTACT STORMTRAP.

VCBMP VOLUME CALCULATION

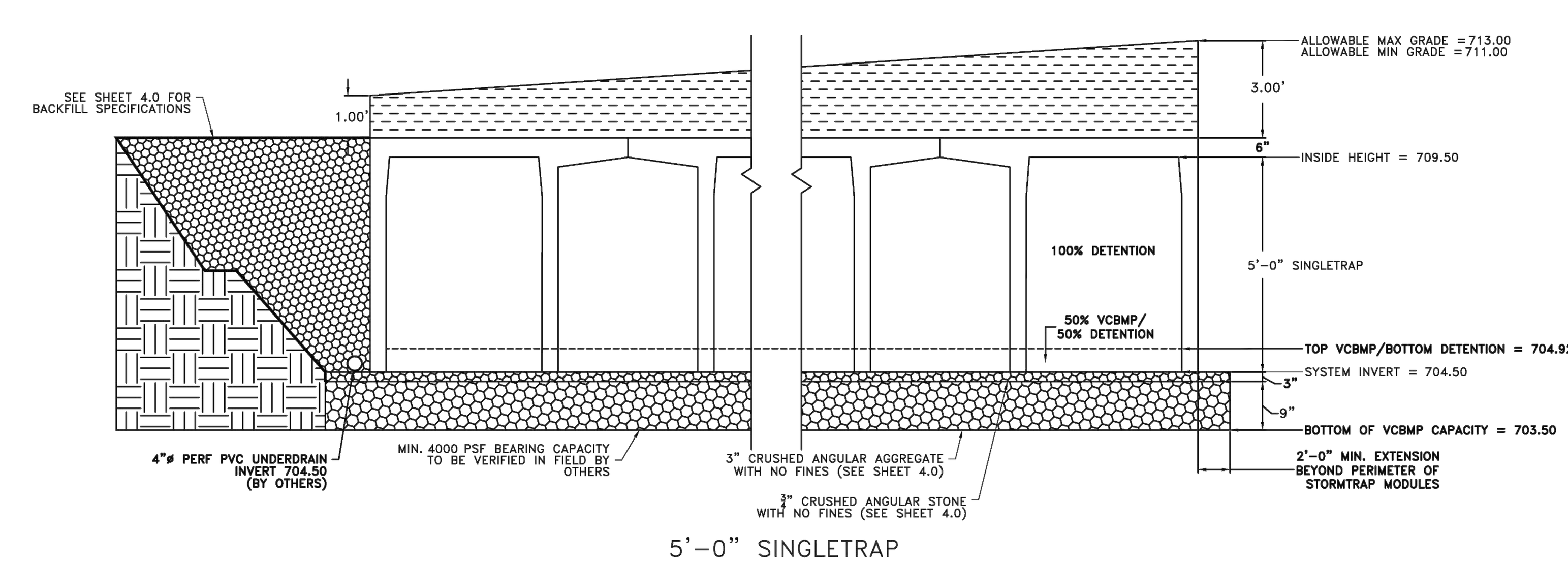
- TOTAL VCBMP STORAGE REQUIRED = 9,366.00 CUBIC FEET
- VCBMP STORAGE PROVIDED = 3,092.51 CUBIC FEET (ELEV 704.92 – ELEV 704.50, 50% IN SYSTEM)
- VCBMP STORAGE PROVIDED = 6,295.45 CUBIC FEET (ELEV 704.50 – ELEV 703.50, 36% STONE VOID)
- TOTAL VCBMP STORAGE PROVIDED = 9,387.96 CUBIC FEET

DETENTION VOLUME CALCULATION

- TOTAL WATER STORAGE REQUIRED = 69,696.00 CUBIC FEET
- WATER STORAGE PROVIDED = 67,446.26 CUBIC FEET (ELEV 709.50 – ELEV 704.92, 100% IN SYSTEM)
- WATER STORAGE PROVIDED = 3,092.51 CUBIC FEET (ELEV 704.92 – ELEV 704.50, 50% VCBMP CREDIT)
- TOTAL WATER STORAGE PROVIDED = 70,538.77 CUBIC FEET

SEASONAL HIGH WATER TABLE

- SHWT = 701.50' (ELEVATION)
  *TO BE VERIFIED BY OTHERS
- VCBMP BOTTOM TO SHWT = 3.0' (DISTANCE)
- AMOUNT OF NATIVE SOIL ABOVE SHWT = 3.0' (DISTANCE)



5'-0" SINGLETRAP

SHEET TITLE: SINGLETRAP DESIGN CRITERIA

SHEET NUMBER: 1.0

BILL OF MATERIALS

QTY.	UNIT TYPE	DESCRIPTION	WEIGHT
0	I	5'-0" SINGLETRAP	0
100	II	5'-0" SINGLETRAP	17906
0	III	5'-0" SINGLETRAP	0
30	IV	5'-0" SINGLETRAP	16618
0	VII	5'-0" SINGLETRAP	0
4	SPIV	5'-0" SINGLETRAP	VARIES
0	T2 PANEL	6" THICK PANEL	0
4	T4 PANEL	6" THICK PANEL	2733
0	T7 PANEL	6" THICK PANEL	0
24	JOINTWRAP	150' PER ROLL	
0	JOINTTAPE	14.5' PER ROLL	
TOTAL PIECES = 134			
TOTAL PANELS = 4			
HEAVIEST PICK WEIGHT = 17,906			

LOADING DISCLAIMER:

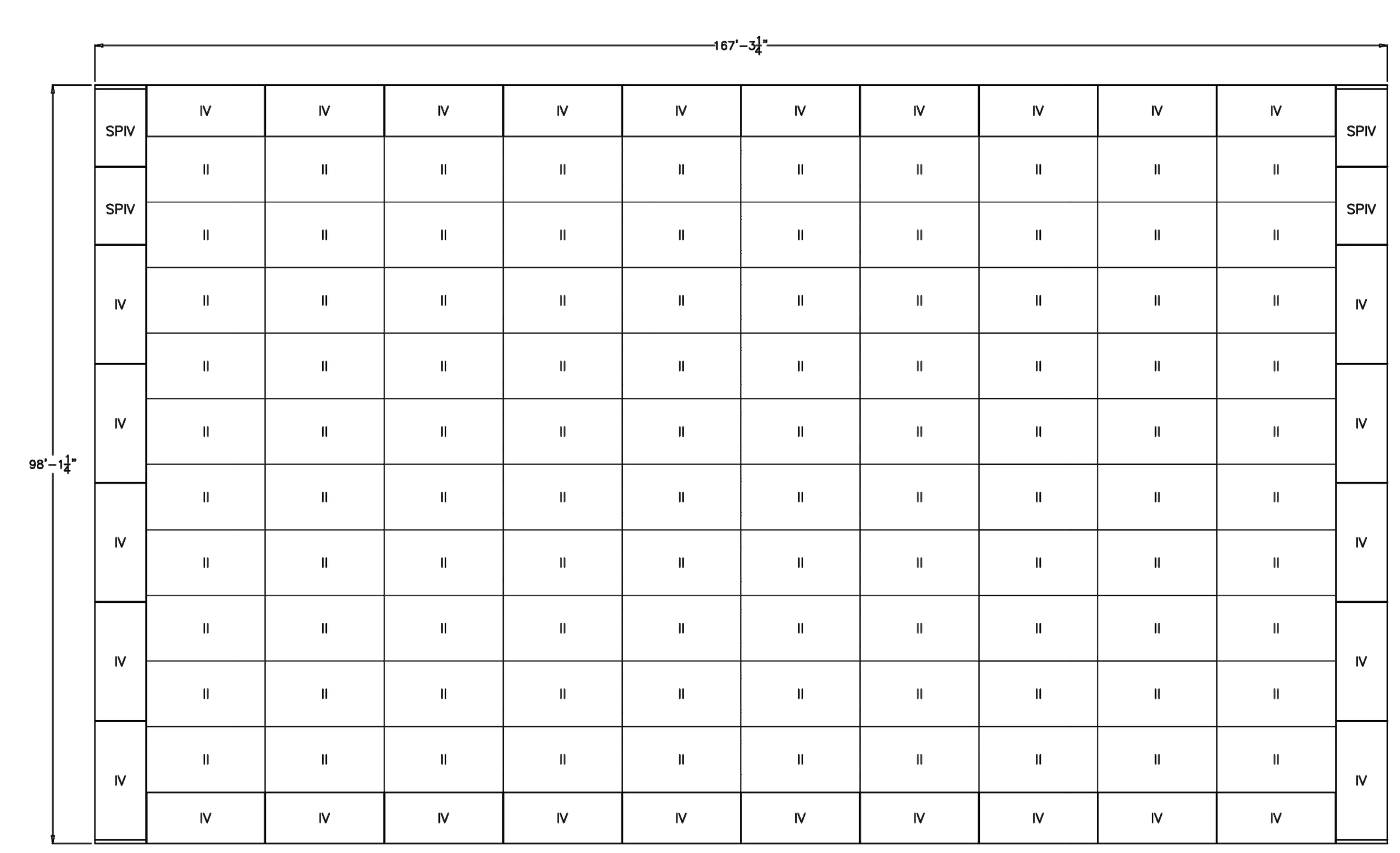
STORMTRAP IS NOT DESIGNED TO ACCEPT ANY ADDITIONAL LOADINGS FROM NEARBY STRUCTURES NEXT TO OR OVER THE TOP OF STORMTRAP. IF ADDITIONAL LOADING CONSIDERATIONS ARE REQUIRED FOR STRUCTURAL DESIGN OF STORMTRAP, PLEASE CONTACT STORMTRAP IMMEDIATELY.

TREE LOADING DISCLAIMER:

THE STORMTRAP SYSTEM HAS NOT BEEN DESIGNED TO SUPPORT THE ADDITIONAL WEIGHT OF ANY TREES. FURTHERMORE, THE ROOTS OF THE TREES MUST BE CONTAINED TO PREVENT FUTURE DAMAGE TO THE STORMTRAP SYSTEM. STORMTRAP ACCEPTS NO LIABILITY FOR DAMAGES CAUSED BY TREES OR OTHER VEGETATION PLACE AROUND OR ON TOP OF THE SYSTEM.

DESIGN CRITERIA
ALLOWABLE MAX GRADE = 713.00
ALLOWABLE MIN GRADE = 711.00
INSIDE HEIGHT ELEVATION = 709.50
SYSTEM INVERT = 704.50

NOTES:
1. DIMENSIONING OF STORMTRAP SYSTEM SHOWN BELOW ALLOW FOR A 3/4" GAP BETWEEN EACH MODULE.
2. ALL DIMENSIONS TO BE VERIFIED IN THE FIELD BY OTHERS.
3. SEE SHEET 3.0 FOR INSTALLATION SPECIFICATIONS.
4. SEE SHEETS 6.0 & 6.1 FOR SPLASH PAD DETAILS AND LAYOUT.
5. SP – INDICATES A MODULE WITH MODIFICATIONS.
6. P – INDICATES A MODULE WITH A PANEL ATTACHMENT.
7. CONTRACTORS RESPONSIBILITY TO ENSURE CONSISTENCY/ACCURACY TO FINAL ENGINEER OF RECORD PLAN SET.

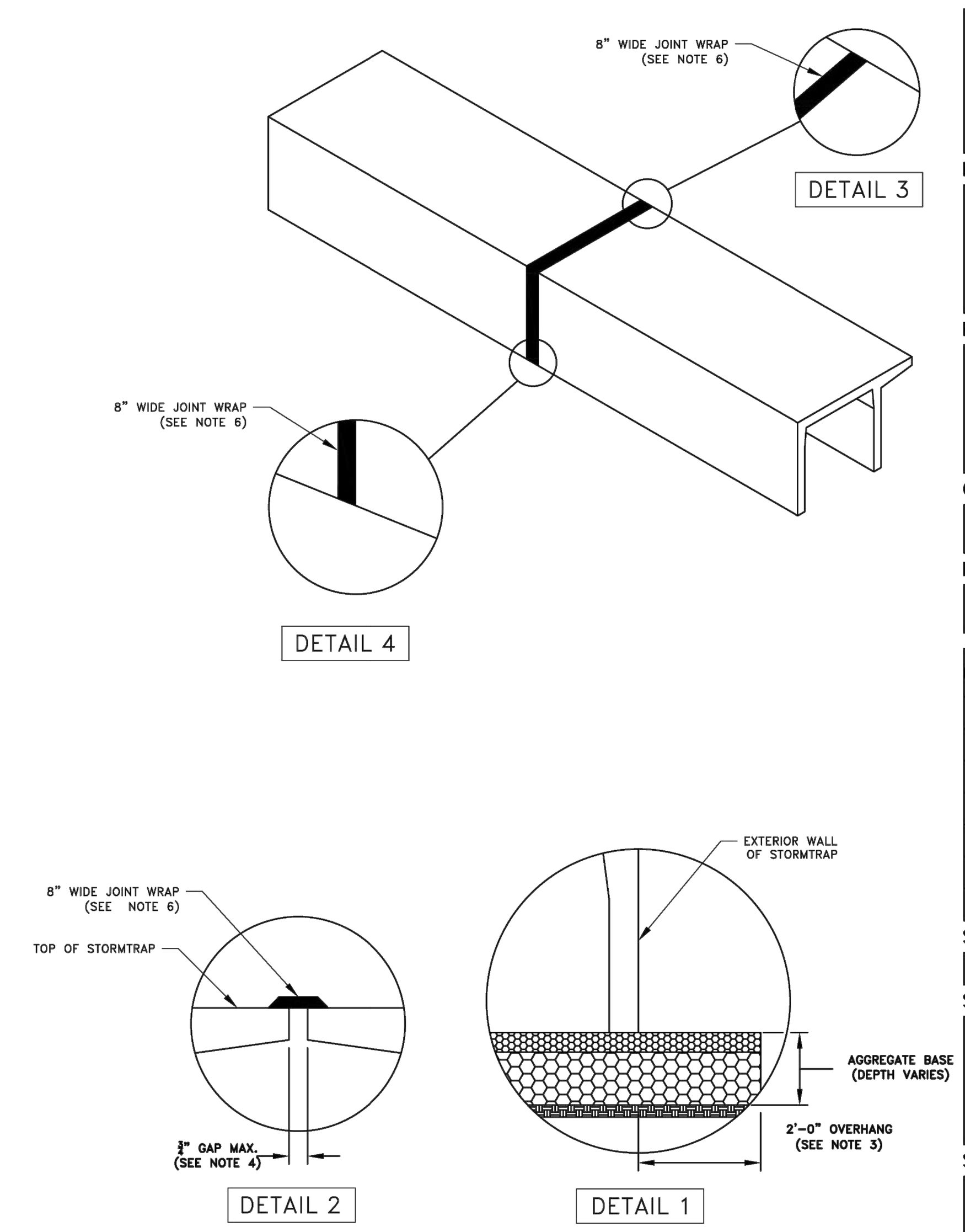


SHEET TITLE: SINGLETRAP LAYOUT DETAILS

SHEET NUMBER: 2.0

STORMTRAP INSTALLATION SPECIFICATIONS

1. STORMTRAP SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C891 STANDARD PRACTICE FOR INSTALLATION OF UNDERGROUND PRE-CAST CONCRETE UTILITY STRUCTURES. THE FOLLOWING ADDITIONS AND/OR EXCEPTIONS SHALL APPLY:
2. IT IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR TO ENSURE THAT PROPER/ADEQUATE EQUIPMENT IS USED TO SET/INSTALL THE MODULES.
3. THE AGGREGATE FOUNDATION HAS BEEN DESIGNED BASED ON THE FOLLOWING ASSUMPTIONS. THESE ASSUMPTIONS WILL NEED TO BE VERIFIED BY A GEOTECHNICAL ENGINEER WHICH WILL NEED TO BE EMPLOYED BY THE OWNER.
   - 3.1. A QUALIFIED GEOTECHNICAL ENGINEER WILL BE EMPLOYED, BY OWNER, TO PROVIDE ASSISTANCE IN EVALUATING THE EXISTING SOIL CONDITIONS BELOW THE PROPOSED ENGINEERED STONE FOUNDATION. IF A STONE FOUNDATION DESIGN IS TO BE USED, THE BEARING PRESSURE OF THE SOILS BELOW THE STONE WILL NEED TO MEET OR EXCEED ALLOWABLE CAPACITY. IF THIS IS NOT POSSIBLE, THE STONE FOUNDATION MAY NOT BE AN OPTION FOR THIS LOCATION.
   - 3.2. A QUALIFIED GEOTECHNICAL ENGINEER WILL BE EMPLOYED, BY OWNER, TO EVALUATE A SOURCE OF STONE AGGREGATES THAT WILL BE PLACED ON PROPERLY COMPACTED SOILS (SEE SHEET 1.0 FOR SOIL BEARING CAPACITY REQUIREMENTS). THE AGGREGATE BASE COURSE FOR WHICH THE STORMTRAP SYSTEM WILL BEAR DIRECTLY ON SHALL CONSIST OF A 3" THICK BED OF 3/4" DIAMETER ANGULAR STONE, WELL COMPACTED AND SEATED, WITH NO FINES. AND A 9" THICK BED OF 3" ANGULAR AGGREGATE (SEE SHEET 4.0 FOR FURTHER DESCRIPTION/EXPLANATION). PLEASE NOTE THAT THESE ARE ONLY MINIMUM RECOMMENDATIONS AND A QUALIFIED GEOTECHNICAL ENGINEER SHALL BE USED TO DETERMINE THE EXACT REQUIREMENTS FOR THE LOCATIONS THAT THE STORMTRAP SYSTEM IS TO BE LOCATED.
   - 3.3. THE CONTRACTOR SHALL REMOVE ANY AND ALL EXPANDABLE OR COLLAPSIBLE SOILS AT THE DIRECTION OF A QUALIFIED GEOTECHNICAL ENGINEER.
   - 3.4. THE AGGREGATE FOUNDATION SHALL BE INSTALLED SUCH THAT THE AGGREGATE EXTENDS A MINIMUM OF 2'-0" PAST THE OUTSIDE OF THE SYSTEM (SEE DETAIL 1).
   - 3.5. THE 3/4" AGGREGATE SHALL BE COMPACTED USING A VIBRATING ROLLER WITH ITS' FULL DYNAMIC FORCE APPLIED TO ACHIEVE A FLAT SURFACE.
   - 3.6. DISK, DRY AND COMPACT THE TOP 8" OF THE SUBGRADE SOILS TO 95% OF THE STANDARD DRY DENSITY AND 110% OPTIMUM MOISTURE CONTENT.
   - 3.7. AGGREGATE SHALL BE GRADED WITHIN +/- 1/4" OF THE GRADE SHOWN ON THE PLANS.
   - 3.8. MINIMUM SOIL BEARING CAPACITY LISTED ON SHEET 1.0 SHALL BE VERIFIED IN FIELD BY OTHERS.
4. THE STORMTRAP MODULES SHALL BE PLACED SUCH THAT THE MAXIMUM SPACE BETWEEN ADJACENT MODULES DOES NOT EXCEED 3/4" (SEE DETAIL 2). IF THE SPACE EXCEEDS 3/4", THE MODULES SHALL BE RESET WITH APPROPRIATE ADJUSTMENT MADE TO LINE AND GRADE TO BRING THE SPACE INTO SPECIFICATION.
5. STORMTRAP MODULES ARE NOT WATERTIGHT. IF A WATERTIGHT SOLUTION IS REQUIRED, CONTACT STORMTRAP FOR RECOMMENDATIONS. THE WATERTIGHT APPLICATION IS TO BE PROVIDED AND IMPLEMENTED BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THE SELECTED WATERTIGHT SOLUTION PERFORMS AS SPECIFIED BY THE MANUFACTURER.
6. ALL EXTERIOR ROOF AND EXTERIOR VERTICAL WALL JOINTS BETWEEN ADJACENT STORMTRAP MODULES SHALL BE SEALED WITH 8" WIDE PRE-FORMED, COLD-APPLIED, SELF-ADHERING ELASTOMERIC RESIN, BONDED TO A WOVEN , HIGHLY PUNCTURE RESISTANT POLYMER WRAP, CONFORMING TO ASTM C891 AND SHALL BE INTEGRATED WITH PRIMER SEALANT AS APPROVED BY STORMTRAP (SEE DETAILS 2, 3, & 4). THE JOINT WRAP DOES NOT PROVIDE A WATERTIGHT SEAL. THE SOLE PURPOSE OF THE JOINT WRAP IS TO PROVIDE A SILT AND SOIL TIGHT SYSTEM. THE ADHESIVE EXTERIOR JOINT WRAP SHALL BE INSTALLED ACCORDING TO THE FOLLOWING INSTALLATION INSTRUCTIONS:
   - 6.1. USE A BRUSH OR WET CLOTH TO THOROUGHLY CLEAN THE OUTSIDE SURFACE AT THE POINT WHERE THE JOINT WRAP IS TO BE APPLIED.
   - 6.2. A RELEASE PAPER PROTECTS THE ADHESIVE SIDE OF THE JOINT WRAP. PLACE THE ADHESIVE TAPE (ADHESIVE SIDE DOWN) AROUND THE STRUCTURE, REMOVING THE RELEASE PAPER AS YOU GO. PRESS THE JOINT WRAP FIRMLY AGAINST THE STORMTRAP MODULE SURFACE WHEN APPLYING.
7. IF THE CONTRACTOR NEEDS TO CANCEL ANY SHIPMENTS, THEY MUST DO SO 48 HOURS PRIOR TO THEIR SCHEDULED ARRIVAL AT THE JOB SITE. IF CANCELED AFTER THAT TIME, PLEASE CONTACT THE PROJECT MANAGER.
8. IF THE STORMTRAP MODULE(S) IS DAMAGED IN ANY WAY PRIOR, DURING, OR AFTER INSTALL, STORMTRAP, MUST BE CONTACTED IMMEDIATELY TO ASSESS THE DAMAGE AND TO DETERMINE WHETHER OR NOT THE MODULE(S) WILL NEED TO BE REPLACED. IF ANY MODULE ARRIVES AT THE JOBSITE DAMAGED DO NOT UNLOAD IT; CONTACT STORMTRAP, IMMEDIATELY. ANY DAMAGE NOT REPORTED BEFORE THE TRUCK IS UNLOADED WILL BE THE CONTRACTOR'S RESPONSIBILITY.
9. STORMTRAP MODULES CANNOT BE ALTERED IN ANY WAY AFTER MANUFACTURING WITHOUT WRITTEN CONSENT FROM STORMTRAP.



SHEET TITLE: SINGLETRAP INSTALLATION SPECIFICATIONS

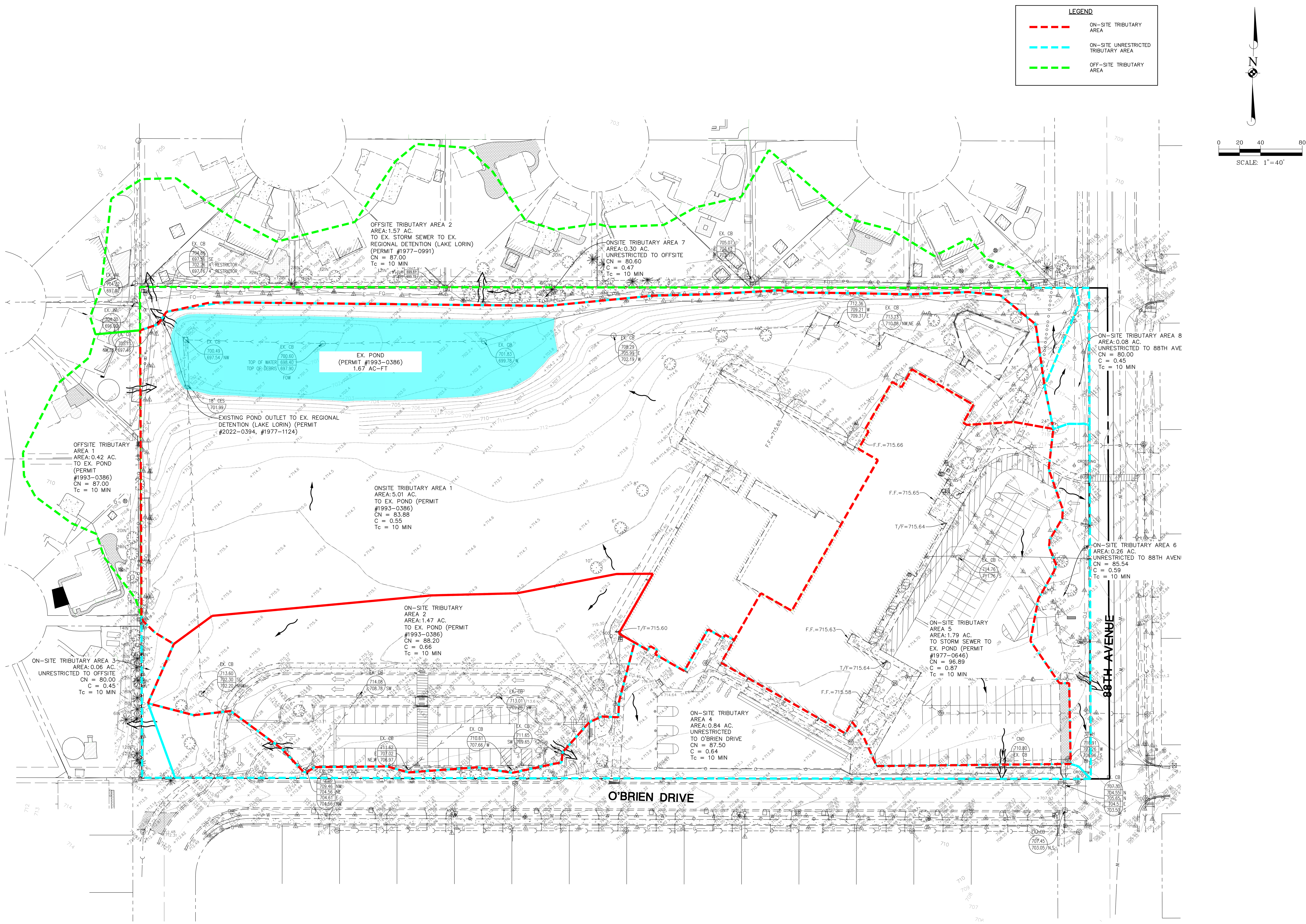
SHEET NUMBER: 3.0

TRIA ARCHITECTURE

KIRBY SCHOOL DISTRICT 140
2023
NEW FERNWAY PARK ELEMENTARY SCHOOL
16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

STORM TRAP DETAILS

C17.00


LEGEND
ON-SITE TRIBUTARY AREA
ON-SITE UNRESTRICTED TRIBUTARY AREA
OFF-SITE TRIBUTARY AREA
N
0 20 40 80
SCALE: 1"=40'
OFFSITE TRIBUTARY AREA 2
AREA: 1.57 AC.
TO EX. STORM SEWER TO EX. REGIONAL DETENTION (LAKE LORIN)
(PERMIT #1977-0991)
CN = 87.00
Tc = 10 MIN
ONSITE TRIBUTARY AREA 7
AREA: 0.30 AC.
UNRESTRICTED TO OFFSITE
CN = 80.60
C = 0.47
Tc = 10 MIN
EX. POND
(PERMIT #1993-0386)
1.67 AC-FT
EXISTING POND OUTLET TO EX. REGIONAL DETENTION (LAKE LORIN) (PERMIT #2022-0394, #1977-1124)
OFFSITE TRIBUTARY AREA 1
AREA: 0.42 AC.
TO EX. POND (PERMIT #1993-0386)
CN = 87.00
Tc = 10 MIN
ONSITE TRIBUTARY AREA 1
AREA: 5.01 AC.
TO EX. POND (PERMIT #1993-0386)
CN = 83.88
C = 0.55
Tc = 10 MIN
ON-SITE TRIBUTARY AREA 8
AREA: 0.08 AC.
UNRESTRICTED TO 88TH AVE
CN = 80.00
C = 0.45
Tc = 10 MIN
ON-SITE TRIBUTARY AREA 6
AREA: 0.26 AC.
UNRESTRICTED TO 88TH AVE
CN = 85.54
C = 0.59
Tc = 10 MIN
ON-SITE TRIBUTARY AREA 2
AREA: 1.47 AC.
TO EX. POND (PERMIT #1993-0386)
CN = 88.20
C = 0.66
Tc = 10 MIN
ON-SITE TRIBUTARY AREA 3
AREA: 0.06 AC.
UNRESTRICTED TO OFFSITE
CN = 80.00
C = 0.45
Tc = 10 MIN
ON-SITE TRIBUTARY AREA 5
AREA: 1.79 AC.
TO STORM SEWER TO EX. POND (PERMIT #1977-0646)
CN = 96.89
C = 0.87
Tc = 10 MIN
ON-SITE TRIBUTARY AREA 4
AREA: 0.84 AC.
UNRESTRICTED TO O'BRIEN DRIVE
CN = 87.50
C = 0.64
Tc = 10 MIN
F.F.=715.66
F.F.=715.65
T/F=715.64
T/F=715.60
F.F.=715.63
T/F=715.64
F.F.=715.58
88TH AVENUE
O'BRIEN DRIVE

TRIA ARCHITECTURE

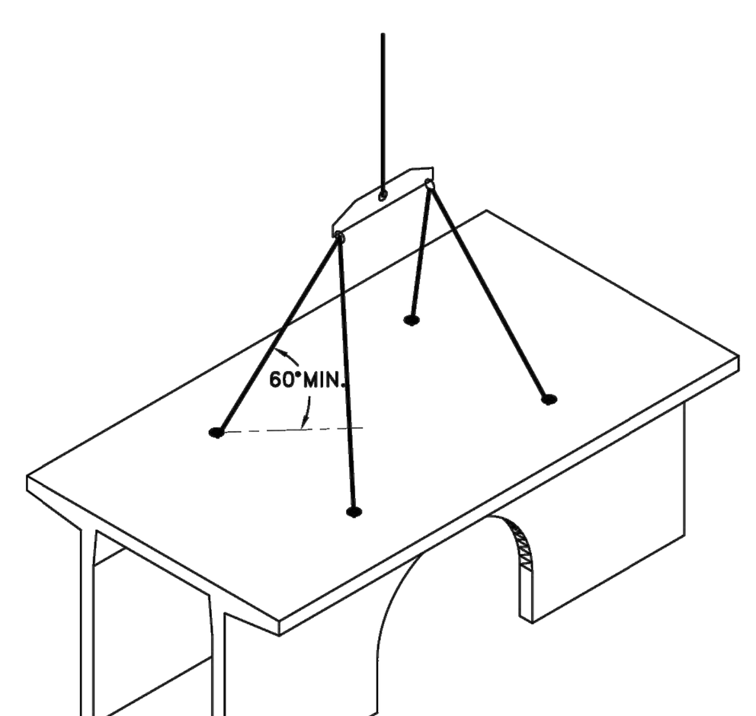
KIRBY SCHOOL DISTRICT 140
2023
NEW FERNWAY PARK ELEMENTARY SCHOOL
16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

MWRD EXISTING DRAINAGE EXHIBIT - ALTERNATE #1

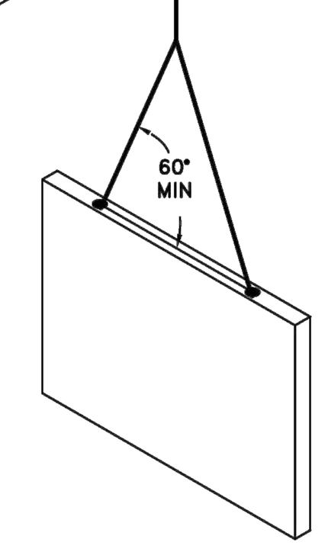
C17.00.1

STORMTRAP MODULE LIFTING INSTALLATION NOTES

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT ALL (4) CHAINS/CABLES ARE SECURED PROPERLY TO THE LIFTING ANCHORS AND IN EQUAL TENSION WHEN LIFTING THE STORMTRAP MODULE (SEE RECOMMENDATIONS 2 & 3).
2. MINIMUM 7'-0" CHAIN/CABLE LENGTH TO BE USED TO LIFT STORMTRAP MODULES (SUPPLIED BY CONTRACTOR).
3. CONTRACTOR TO ENSURE MINIMUM LIFTING ANGLE IS 60° FROM TOP SURFACE OF STORMTRAP MODULE. SEE DETAIL.
4. IT IS UNDERSTOOD AND AGREED THAT AT ALL TIMES DURING WHICH HOISTING AND RIGGING EQUIPMENT IS BEING SUPPLIED TO THE PURCHASER, OPERATOR OF SUCH EQUIPMENT SHALL BE IN CHARGE OF HIS ENTIRE EQUIPMENT AND SHALL AT ALL TIMES BE THE JUDGE OF THE SAFETY AND PROPERTY OF ANY SUGGESTION TO HIM FROM THE SELLER, ITS AGENTS OR EMPLOYEES. PURCHASER AGREES TO SAVE, INDEMNIFY AND HOLD HARMLESS SELLER FROM ALL LOSS, CLAIMS, DEMANDS OR CAUSES OF ACTION, WHICH MAY ARISE FROM THE EXISTENCE OR OPERATION OF SAID EQUIPMENT.



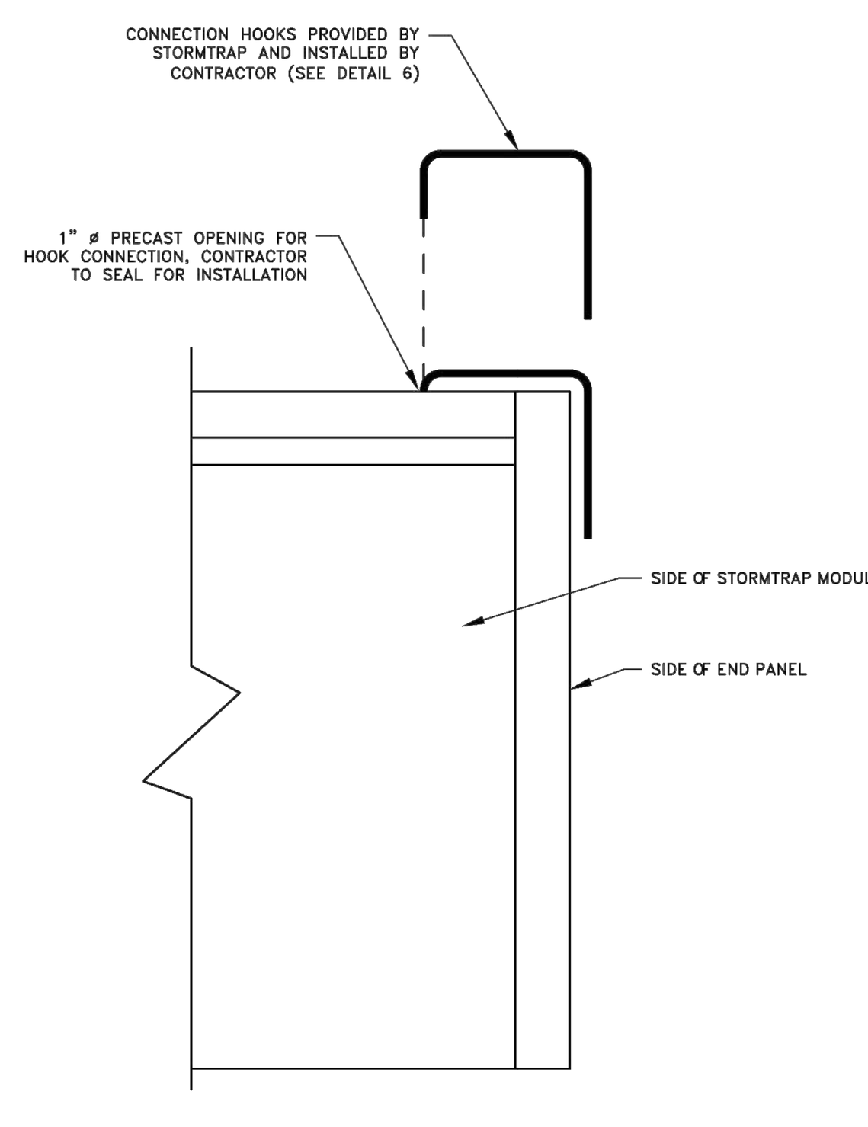
MODULE LIFTING DETAIL



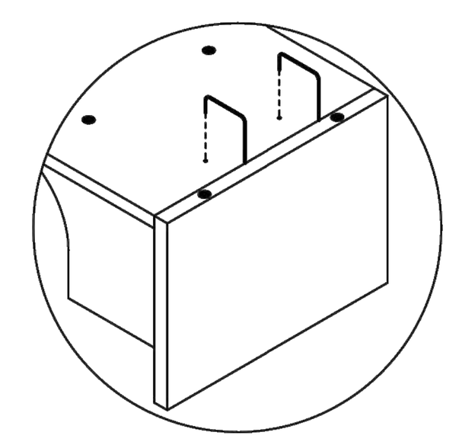
END PANEL LIFTING DETAIL

END PANEL ERECTION/INSTALLATION NOTES

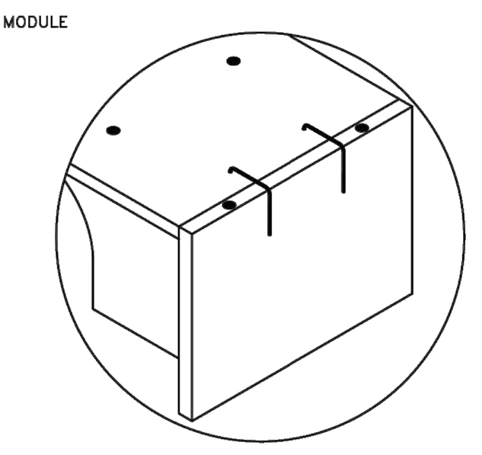
1. END PANELS WILL BE SUPPLIED TO CLOSE OFF OPEN ENDS OF ROWS.
2. PANELS SHALL BE INSTALLED IN A TILT UP FASHION DIRECTLY ADJACENT TO OPEN END OF MODULE (REFER TO SHEET 2.0 FOR END PANEL LOCATIONS).
3. CONNECTION HOOKS WILL BE SUPPLIED WITH END PANELS TO SECURELY CONNECT PANEL TO ADJACENT STORMTRAP MODULE (SEE PANEL CONNECTION ELEVATION VIEW).
4. ONCE CONNECTION HOOK IS ATTACHED, LIFTING CLUTCHES MAY BE REMOVED.
5. JOINT WRAP SHALL BE PLACED AROUND PERIMETER JOINT PANEL (SEE SHEET 3.0).



PANEL CONNECTION ELEVATION VIEW



STEP 1



STEP 2

DETAIL 6

StormTrap®
PATENTS LISTED AT: [HTTP://STORMTRAP.COM/PATENT]
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ROMEOVILLE, IL 60446
P:815-941-4549 / F:331-318-5347

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PROJECT INFORMATION:
FERNWAY PARK
ELEMENTARY
POND B EAST BASIN
ORLAND PARK, IL

CURRENT ISSUE DATE: 6/16/2023

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2	6/16/2023	PRELIMINARY	JPH
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SCALE: NTS

SHEET TITLE: SINGLETRAP INSTALLATION SPECIFICATIONS

SHEET NUMBER: 3.1

ZONE CHART		
ZONES	ZONE DESCRIPTIONS	REMARKS
ZONE 1 A	FOUNDATION AGGREGATE	#5 (¾") STONE AGGREGATE (SEE NOTE 4)
ZONE 1 B	FOUNDATION AGGREGATE (INFILTRATION NOT ALLOWED)	3" RECYCLED CRUSHED CONCRETE (SEE NOTES 5 & 6)
	FOUNDATION AGGREGATE (INFILTRATION ALLOWED)	3" STONE AGGREGATE (SEE NOTE 5)
ZONE 2	BACKFILL	UNIFIED SOILS CLASSIFICATION (GW, GP, SW, SP) OR SEE BELOW FOR APPROVED BACKFILL OPTIONS
ZONE 3	FINAL COVER OVERTOP	MATERIALS NOT TO EXCEED 120 PCF

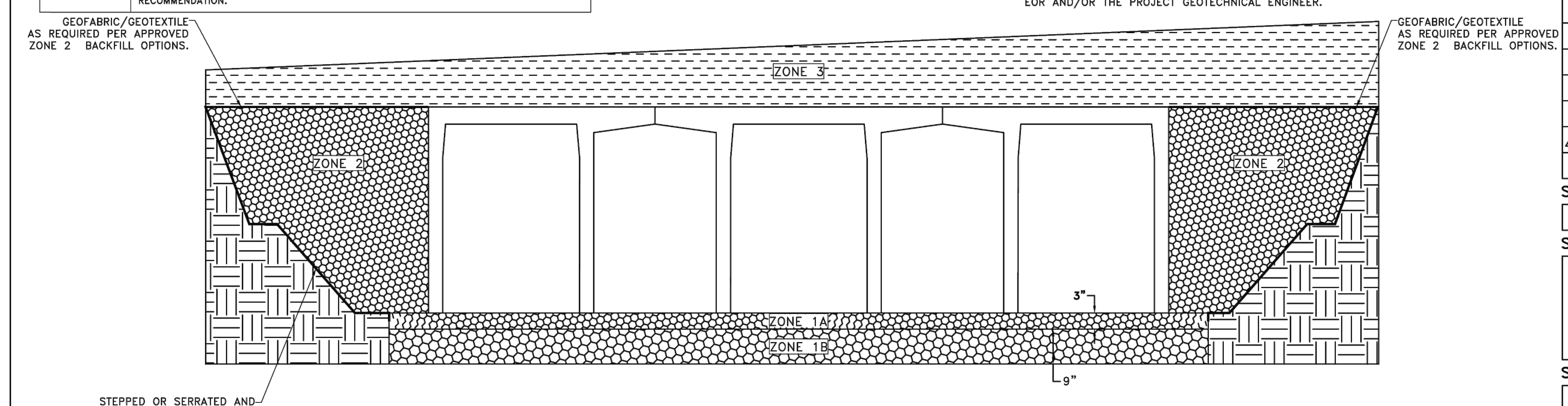
APPROVED ZONE 2 BACKFILL OPTIONS	
OPTION	REMARKS
¾" STONE AGGREGATE	THE STONE AGGREGATE SHALL CONSIST OF CLEAN AND FREE DRAINING ANGULAR MATERIAL. THE SIZE OF THIS MATERIAL SHALL HAVE 100% PASSING THE 1" SIEVE WITH 0% TO 5% PASSING THE #8 SIEVE. THIS MATERIAL SHALL BE SEPARATED FROM NATIVE MATERIAL USING GEOFABRIC AROUND THE PERIMETER OF THE BACKFILL (ASTM SIZE #57) AS DETERMINED BY THE GEOTECHNICAL ENGINEER.
SAND	IMPORTED PURE SAND IS PERMITTED TO BE USED AS BACKFILL IF IT IS CLEAN AND FREE DRAINING. THE SAND USED FOR BACKFILLING SHALL HAVE LESS THAN 40% PASSING #40 SIEVE AND LESS THAN 5% PASSING #200 SIEVE. THIS MATERIAL SHALL BE SEPARATED FROM NATIVE MATERIAL USING GEOFABRIC AROUND THE PERIMETER OF THE SAND BACKFILL.
CRUSHED CONCRETE AGGREGATE	CLEAN, FREE DRAINING CRUSHED CONCRETE AGGREGATE MATERIAL CAN BE USED AS BACKFILL FOR STORMTRAP'S MODULES. THE SIZE OF THIS MATERIAL SHALL HAVE 100% PASSING THE 1" SIEVE WITH 0% TO 5% PASSING THE #8 SIEVE. THIS MATERIAL SHALL BE SEPARATED FROM NATIVE MATERIAL USING GEOFABRIC AROUND THE PERIMETER OF THE BACKFILL.
ROAD PACK	STONE AGGREGATE 100% PASSING THE 1-1/2" SIEVE WITH LESS THAN 12% PASSING THE #200 SIEVE (ASTM SIZE #467). GEOFABRIC AS PER GEOTECHNICAL ENGINEER RECOMMENDATION.

FILL DEPTH	TRACK WIDTH	MAX VEHICLE WEIGHT (KIPS)	MAX GROUND PRESSURE
12"	12"	51.8	1690 psf
	18"	56.1	1219 psf
	24"	68.1	1111 psf
	30"	76.7	1000 psf
	36"	85.0	924 psf

NOTE:
TRACK LENGTH NOT TO EXCEED 15'-4".
ONLY TWO TRACKS PER VEHICLE.

STORMTRAP ZONE INSTALLATION SPECIFICATIONS/PROCEDURES

1. THE FILL PLACED AROUND THE STORMTRAP MODULES MUST DEPOSITED ON BOTH SIDES AT THE SAME TIME AND TO APPROXIMATELY THE SAME ELEVATION. AT NO TIME SHALL THE FILL BEHIND ONE SIDE WALL BE MORE THAN 2'-0" HIGHER THAN THE FILL ON THE OPPOSITE SIDE. BACKFILL SHALL EITHER BE COMPACTED AND/OR VIBRATED TO ENSURE THAT BACKFILL AGGREGATE/STONE MATERIAL IS WELL SEATED AND PROPERLY INTER LOCKED. CARE SHALL BE TAKEN TO PREVENT ANY WEDGING ACTION AGAINST THE STRUCTURE, AND ALL SLOPES WITHIN THE AREA TO BE BACKFILLED MUST BE STEPPED OR SERRATED TO PREVENT WEDGING ACTION. CARE SHALL ALSO BE TAKEN AS NOT TO DISRUPT THE JOINT WRAP FROM THE JOINT DURING THE BACKFILL PROCESS. BACKFILL MUST BE FREE-DRAINING MATERIAL. SEE ZONE 2 BACKFILL CHART ON THIS PAGE FOR APPROVED BACKFILL OPTIONS. IF NATIVE EARTH IS SUSCEPTIBLE TO MIGRATION, CONFIRM WITH GEOTECHNICAL ENGINEER AND PROVIDE PROTECTION AS REQUIRED (PROVIDED BY OTHERS).
2. DURING PLACEMENT OF MATERIAL OVERTOP THE SYSTEM, AT NO TIME SHALL MACHINERY BE USED OVERTOP THAT EXCEEDS THE DESIGN LIMITATIONS OF THE SYSTEM. WHEN PLACEMENT OF MATERIAL OVERTOP, MATERIAL SHALL BE PLACED SUCH THAT THE DIRECTION OF PLACEMENT IS PARALLEL WITH THE OVERALL LONGITUDINAL DIRECTION OF THE SYSTEM WHENEVER POSSIBLE.
3. THE FILL PLACED OVERTOP THE SYSTEM SHALL BE PLACED AT A MINIMUM OF 6" LIFTS. AT NO TIME SHALL MACHINERY OR VEHICLES GREATER THAN THE DESIGN HS-20 LOADING CRITERIA TRAVEL OVERTOP THE SYSTEM WITHOUT THE MINIMUM DESIGN COVERAGE. IF TRAVEL IS NECESSARY OVERTOP THE SYSTEM PRIOR TO ACHIEVING THE MINIMUM DESIGN COVER, IT MAY BE NECESSARY TO REDUCE THE ULTIMATE LOAD/BURDEN OF THE OPERATING MACHINERY SO AS TO NOT EXCEED THE DESIGN CAPACITY OF THE SYSTEM. IN SOME CASES, IN ORDER TO ACHIEVE REQUIRED COMPACTION, HAND COMPACTION MAY BE NECESSARY IN ORDER NOT TO EXCEED THE ALLOTTED DESIGN LOADING. SEE CHART FOR TRACKED VEHICLE WIDTH AND ALLOWABLE MAXIMUM PRESSURE PER TRACK.
4. FREE DRAINING AGGREGATE - 80% AGGREGATE RETAINED ON ½" SIEVE MAJORITY OF AGGREGATE SIZE BETWEEN ½" AND 1" ONLY 5% OF MATERIAL PASSING #⅜ SIEVE.
5. FREE DRAINING, NO FINES, 3" AGGREGATE - MAJORITY OF STONE SIZE IN BETWEEN 1½" AND 3" - VERY SIMILAR TO AASHTO (#1, #2, #3, & #24) STONE AGGREGATE GRADATION.
6. CRUSHED CONCRETE AGGREGATE IS KNOWN TO REACT WITH WATER AND CAN INCREASE THE PH VALUE OF THE GROUND WATER. PRIOR TO USING CRUSHED CONCRETE AGGREGATE IN ZONE 1B IT IS IMPERATIVE THAT THE USE OF SUCH MATERIAL SHALL BE VERIFIED BY THE EOR AND/OR THE PROJECT GEOTECHNICAL ENGINEER.



BACKFILL DETAIL

StormTrap®
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PROJECT INFORMATION:
FERNWAY PARK
ELEMENTARY
POND B EAST BASIN
ORLAND PARK, IL

CURRENT ISSUE DATE: 6/16/2023

ISSUED FOR: PRELIMINARY

REV.	DATE:	ISSUED FOR:	DWN BY:
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SCALE: NTS

SHEET TITLE: SINGLETRAP BACKFILL SPECIFICATIONS

SHEET NUMBER: 4.0

RECOMMENDED ACCESS OPENING SPECIFICATION

1. A TYPICAL ACCESS OPENING FOR THE STORMTRAP SYSTEM ARE 2'-0" IN DIAMETER. ACCESS OPENINGS LARGER THAN 3'-0" IN DIAMETER NEED TO BE APPROVED BY STORMTRAP. ALL OPENINGS MUST RETAIN AT LEAST 1'-0" OF CLEARANCE FROM THE END OF THE STORMTRAP MODULE UNLESS NOTED OTHERWISE. ALL ACCESS OPENINGS TO BE LOCATED ON INSIDE LEG UNLESS OTHERWISE SPECIFIED.
2. PLASTIC COATED STEEL STEPS PRODUCED BY M.A. INDUSTRIES PART #PS3-PFC OR APPROVED EQUAL (SEE STEP DETAIL) ARE PROVIDED INSIDE ANY MODULE WHERE DEEMED NECESSARY. THE HIGHEST STEP IN THE MODULE IS TO BE PLACED A DISTANCE OF 1'-0" FROM THE INSIDE EDGE OF THE STORMTRAP MODULES. ALL ENSUING STEPS SHALL BE PLACED AT A DISTANCE BETWEEN 10" MIN AND 14" MAX BETWEEN THEM. STEPS MAY BE MOVED OR ALTERED TO AVOID OPENINGS OR OTHER IRREGULARITIES IN THE MODULE.
3. STORMTRAP LIFTING INSERTS MAY BE RELOCATED TO AVOID INTERFERENCE WITH ACCESS OPENINGS OR THE CENTER OF GRAVITY OF THE MODULE AS NEEDED.
4. STORMTRAP ACCESS OPENINGS MAY BE RELOCATED TO AVOID INTERFERENCE WITH INLET AND/OR OUTLET PIPE OPENINGS SO PLACEMENT OF STEPS IS ATTAINABLE.
5. ACCESS OPENINGS SHOULD BE LOCATED IN ORDER TO MEET THE APPROPRIATE MUNICIPAL REQUIREMENTS. STORMTRAP RECOMMENDS AT LEAST TWO ACCESS OPENINGS PER SYSTEM FOR ACCESS AND INSPECTION.
6. USE PRECAST ADJUSTING RINGS AS NEEDED TO MEET GRADE. STORMTRAP RECOMMENDS FOR COVER OVER 2' TO USE PRECAST BARREL OR CONE SECTIONS. (PROVIDED BY OTHERS)

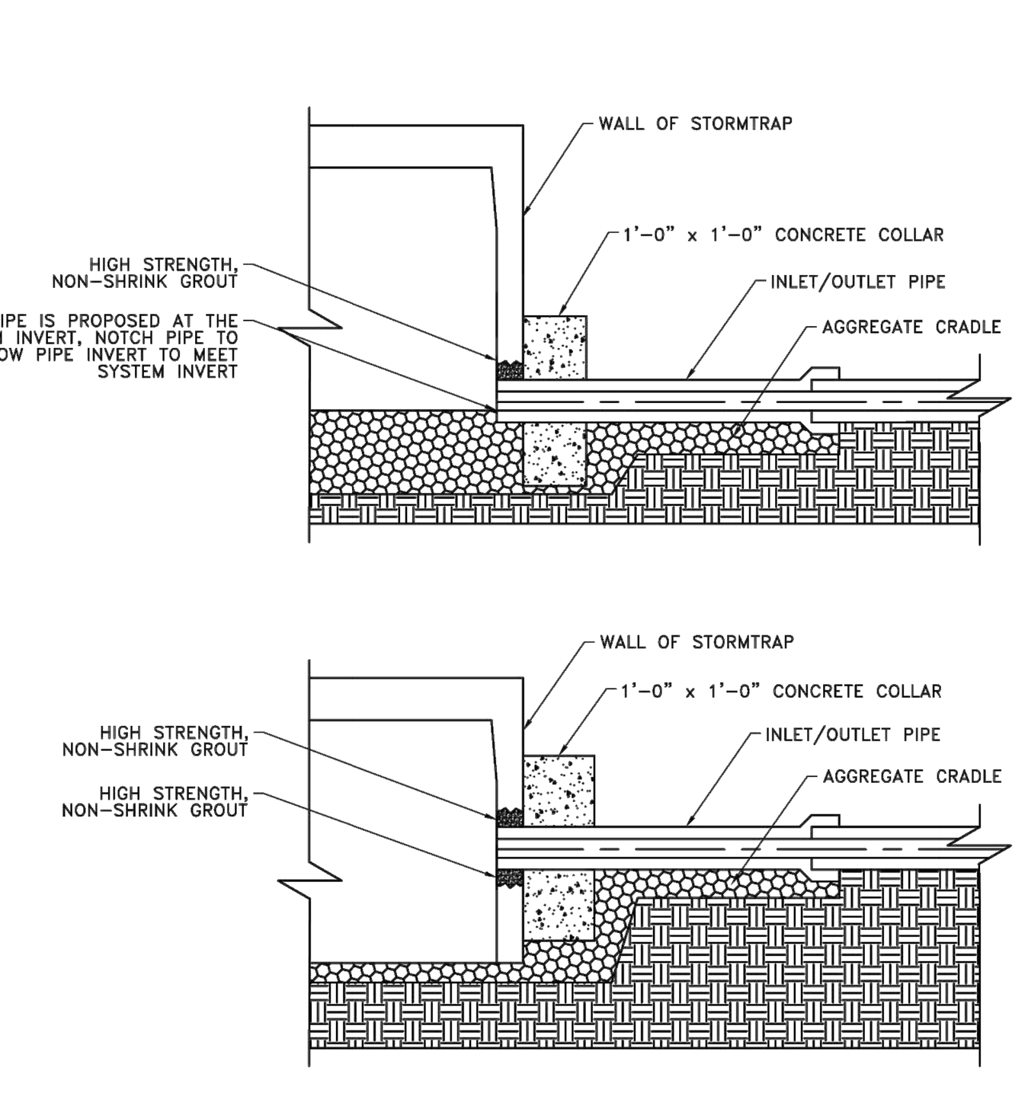
RECOMMENDED PIPE OPENING SPECIFICATION

1. MINIMUM EDGE DISTANCE FOR AN OPENING ON THE OUTSIDE WALL SHALL BE NO LESS THAN 1'-0".
2. MAXIMUM OPENING SIZE TO BE DETERMINED BY THE MODULE HEIGHT. PREFERRED OPENING SIZE IS ø 36" OR LESS. ANY OPENING NEEDED THAT DOES NOT FIT THIS CRITERIA SHALL BE BROUGHT TO THE ATTENTION OF STORMTRAP FOR REVIEW.
3. CONNECTING PIPES SHALL BE INSTALLED WITH A 1'-0" CONCRETE COLLAR, AND AN AGGREGATE CRADLE FOR AT LEAST ONE PIPE LENGTH (SEE PIPE CONNECTION DETAIL). A STRUCTURAL GRADE CONCRETE OR HIGH STRENGTH, NON-SHRINK GROUT WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI SHALL BE USED.
4. THE ANNULAR SPACE BETWEEN THE PIPE AND THE HOLE SHALL BE FILLED WITH HIGH STRENGTH NON-SHRINK GROUT.

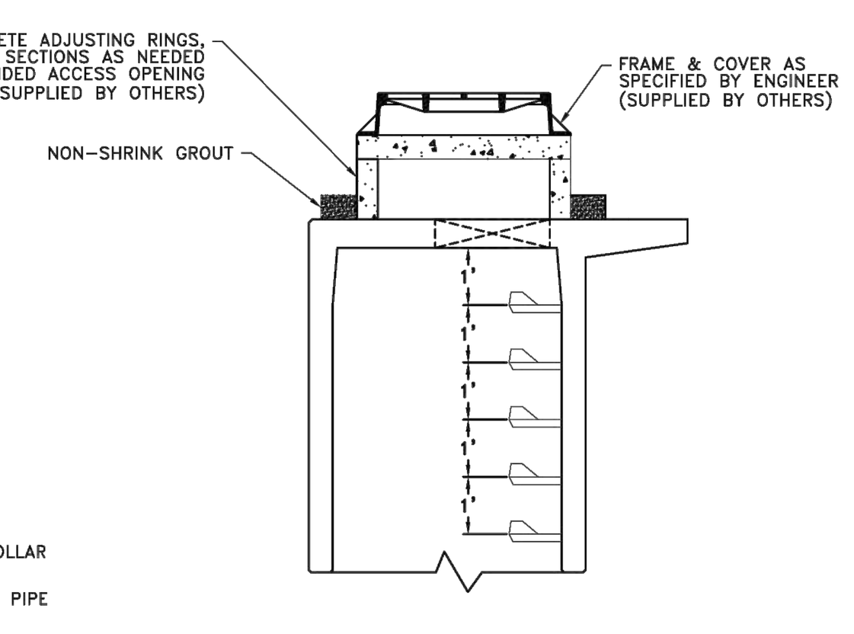
RECOMMENDED PIPE INSTALLATION INSTRUCTIONS

1. CLEAN AND LIGHTLY LUBRICATE ALL OF THE PIPE TO BE INSERTED INTO STORMTRAP.
2. IF PIPE IS CUT, CARE SHOULD BE TAKEN TO ALLOW NO SHARP EDGES. BEVEL AND LUBRICATE LEAD END OF PIPE.
3. ALIGN CENTER OF PIPE TO CORRECT ELEVATION AND INSERT INTO OPENING.

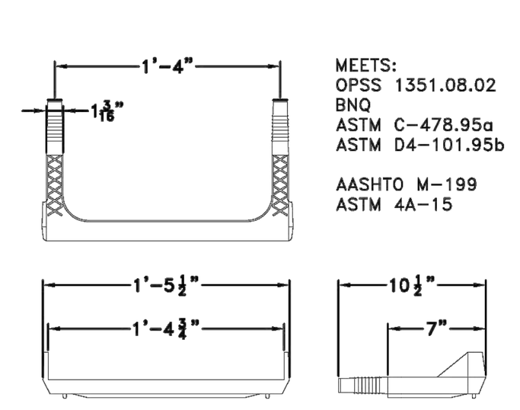
NOTE: ALL ANCILLARY PRODUCTS/SPECIFICATIONS RECOMMENDED AND SHOWN ON THIS SHEET ARE RECOMMENDATIONS ONLY AND SUBJECT TO CHANGE PER THE INSTALLING CONTRACTOR AND/OR PER LOCAL MUNICIPAL CODE/REQUIREMENTS.



PIPE CONNECTION DETAIL



RISER / STAIR DETAIL



STEP DETAIL

*** NOTICE *** 03-25-2022
DUE TO CURRENT INCONSISTENCIES IN THE 16" STEP SUPPLY, STORMTRAP MAY SUBSTITUTE THE 16" STEP WITH THE CLOSEST ALTERNATIVE LENGTH STEP UNTIL THE SUPPLY CHAIN ISSUE IS RESOLVED.

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PROJECT INFORMATION:
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SCALE: NTS

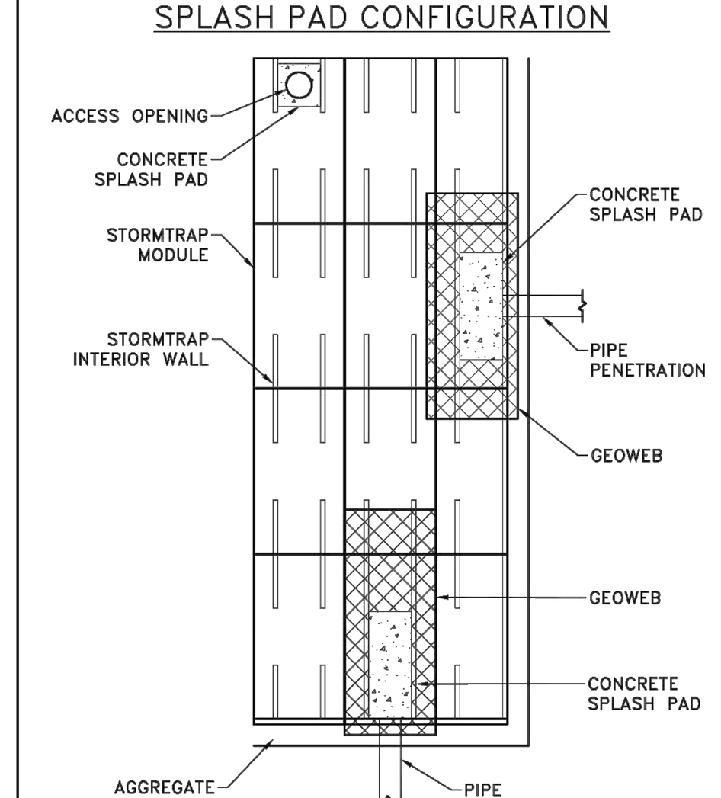
SHEET TITLE: RECOMMENDED PIPE / ACCESS OPENING SPECIFICATIONS

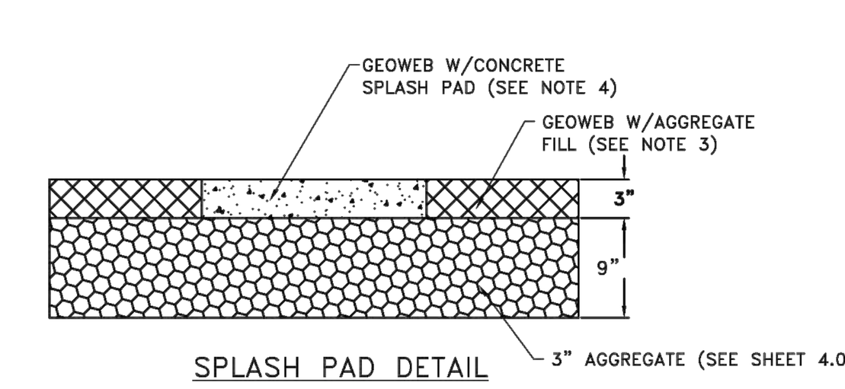
SHEET NUMBER: 5.0

NOTES:

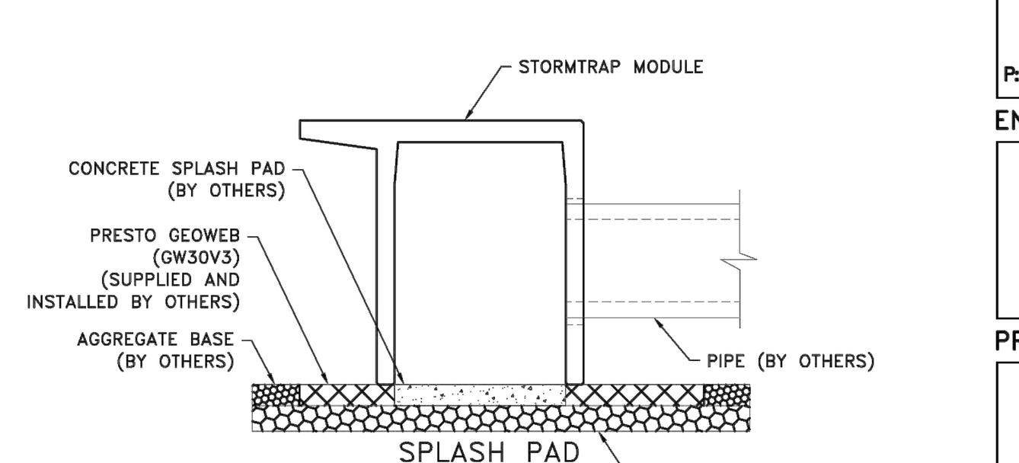
1. THE APPROVED GEOWEB SHALL BE PRESTO GEOWEB (GW30V3). THE GEOWEB NOMINAL DIMENSIONS SHALL BE 9-FT x 25-FT.
2. THE CONCRETE SPLASH PAD AND GEOWEB SHALL BE INSTALLED PRIOR TO INSTALLATION OF THE STORMTRAP MODULES.
3. THE GEOWEB INFILL MATERIAL SHALL BE #5 AGGREGATE.
4. THE CONCRETE SPLASH PAD SHALL BE INSTALLED WITHIN THE GEOWEB AND IS REQUIRED AT ALL PIPE ENTRY LOCATIONS.
5. THE GEOWEB EDGE SHALL BE INSTALLED 1-FT BEYOND THE OUTER PERIMETER OF THE STORMTRAP SYSTEM.
6. THE GEOWEB LONGITUDINAL DIMENSION (25-FT) SHALL BE INSTALLED PARALLEL TO THE STORMTRAP LEGS.
7. THE CONCRETE SPLASH PAD AND GEOWEB SHALL BE CENTERED AT THE PIPE PENETRATION.
8. REFER TO SPLASH PAD LAYOUT FOR CONCRETE SPLASH PAD DIMENSIONS.
9. IF ANY PRODUCT OTHER THAN PRESTO GEOWEB IS TO BE INSTALLED, THE PRODUCT MANUFACTURER IS REQUIRED TO SUBMIT A LETTER STATING THAT THE PRODUCT IS EQUAL OR BETTER THEN PRESTO GEOWEB, BOTH IN PERFORMANCE AND IN STRUCTURAL CAPACITY.
10. ALL GEOWEB AND SPLASH PADS TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
11. A CONCRETE SPLASH PAD IS REQUIRED AT ANY ACCESS OPENING THAT HAS AN OPEN GRATE FOR DRAINAGE. THE CONCRETE SPLASH PAD SHALL EXTEND BETWEEN THE UNIT LEG WALLS AND 3'-0" FROM THE CENTERLINE OF THE OPENING ON BOTH SIDES UNLESS SPECIFIED OTHERWISE ON THE SPLASH PAD LAYOUT. GEOWEB IS NOT REQUIRED UNDER ACCESS OPENINGS.

SPLASH PAD CONFIGURATION

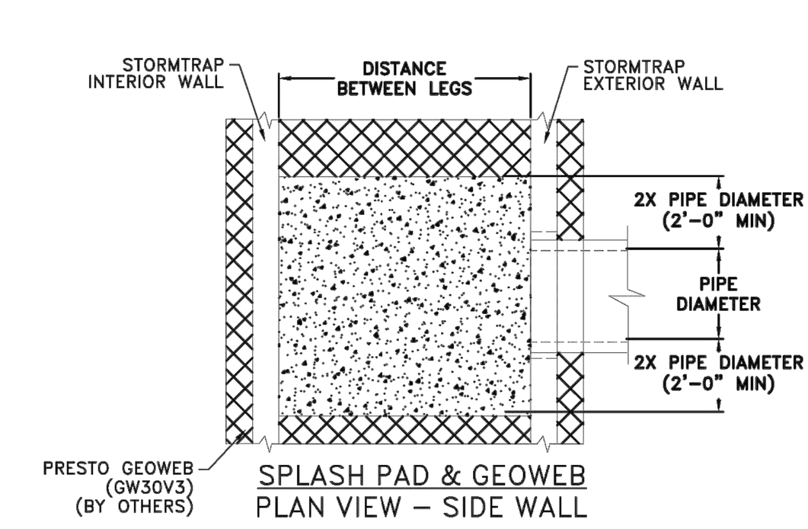




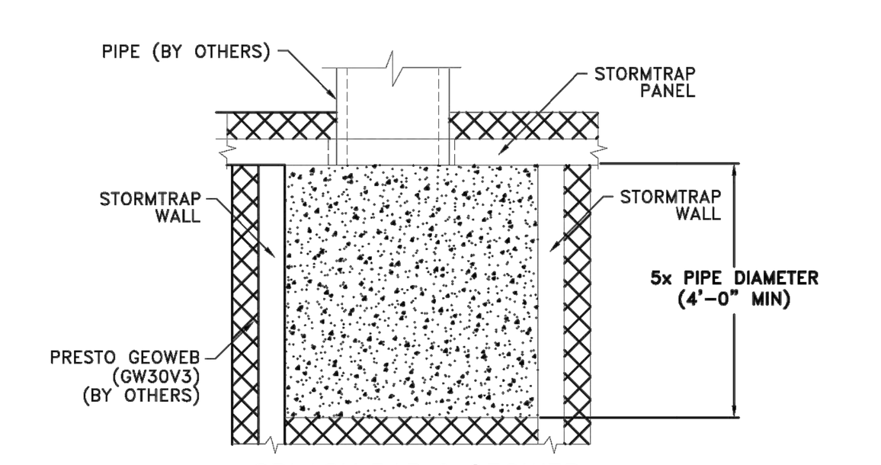
SPLASH PAD DETAIL



SPLASH PAD ELEVATION



SPLASH PAD & GEOWEB PLAN VIEW – SIDE WALL



SPLASH PAD & GEOWEB PLAN VIEW – END PANEL

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PROJECT INFORMATION:
FERNWAY PARK
ELEMENTARY
POND B EAST BASIN
ORLAND PARK, IL

CURRENT ISSUE DATE: 6/16/2023

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SCALE: NTS

SHEET TITLE: SPLASH PAD & GEOWEB DETAILS

SHEET NUMBER: 6.0

TRIA ARCHITECTURE

CIVIL/LANSCAPE CONSULTANT: Manhard Consulting, One Overlook Point, Suite 290, Lincolnshire, IL 60069 (P) (847) 634-5550

STRUCTURAL CONSULTANT: Larson Engineering, Inc. (P) 630.357.0540 (F) 630.357.0164

MEP/FP CONSULTANT: O'Hagan & Arnold Sustainability, LLC, 769 Heartland Dr., Unit A, Sugar Grove, Illinois 60554

KIRBY SCHOOL DISTRICT 140
2023
NEW FERNWAY PARK ELEMENTARY SCHOOL
16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

PROJECT NUMBER: 21-054.1
PROJECT MANAGER: YG
DRAWN BY:
ISSUED FOR BID: 10/30/2023
STORM TRAP DETAILS
REVISIONS: 1, 2, 3, 4, 5

C18.00

HATCH LEGEND

[hatch]	IMPERVIOUS AREA

AREA SUMMARY

TOTAL DETENTION SERVICE AREA = 9.49 AC
AREA TO POND A = 6.05 AC
AREA TO POND B = 3.44 AC

EXISTING IMPERVIOUS AREA WITHIN DEVELOPMENT AREA = 3.99 AC
PROPOSED IMPERVIOUS AREA WITHIN DEVELOPMENT AREA = 6.25 AC

OFFSITE FLOW AREA = 2.09 AC
(OFFSITE FLOW DRAINS TO EX. STORM SEWER
PER MWRD PERMIT 1977-0991 AND OVERFLOWS TO POND A)
RUNOFF COEFFICIENT (OFFSITE) = 0.50 (MWRD PERMIT 1977-1124)

TOTAL MAINTENANCE AREA = 0.00 AC
TOTAL DEVELOPMENT AREA = 9.80 AC

Manhard CONSULTING

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: FERNWAY PARK ELEMENTARY SCHOOL PERMIT NUMBER:
LOCATION: Site DATE: 10/4/2023

TYPE OF AREA (SELECT WITH DROP-DOWN)
___ DETAINED AREA ___ MAJOR STORMWATER SYSTEM
___ UNRESTRICTED AREA ___ OTHER:
___ UPSTREAM AREA

CONDITION (SELECT WITH DROP-DOWN)
___ PROPOSED CONDITION ___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	D	98	6.25	612.50
Pervious Area	D	80	3.55	284.00
		TOTALS:	9.80	896.50

COMPOSITE RUNOFF CURVE NUMBER

Composite CN = Total Product / Total Area = 896.50 / 9.80 → Composite CN = 91.48

Manhard CONSULTING

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: FERNWAY PARK ELEMENTARY SCHOOL PERMIT NUMBER:
LOCATION: ONSITE TRIBUTARY AREA A DATE:

TYPE OF AREA (SELECT WITH DROP-DOWN)
___ DETAINED AREA ___ MAJOR STORMWATER SYSTEM
___ UNRESTRICTED AREA ___ OTHER:
___ UPSTREAM AREA

CONDITION (SELECT WITH DROP-DOWN)
___ PROPOSED CONDITION ___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	D	98	3.69	361.62
Pervious Area	D	80	2.36	188.80
		TOTALS:	6.05	550.42

COMPOSITE RUNOFF CURVE NUMBER

Composite CN = Total Product / Total Area = 550.42 / 6.05 → Composite CN = 90.98

Manhard CONSULTING

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: FERNWAY PARK ELEMENTARY SCHOOL PERMIT NUMBER:
LOCATION: ONSITE TRIBUTARY AREA B DATE:

TYPE OF AREA (SELECT WITH DROP-DOWN)
___ DETAINED AREA ___ MAJOR STORMWATER SYSTEM
___ UNRESTRICTED AREA ___ OTHER:
___ UPSTREAM AREA

CONDITION (SELECT WITH DROP-DOWN)
___ PROPOSED CONDITION ___ EXISTING CONDITION

RUNOFF CURVE NUMBER

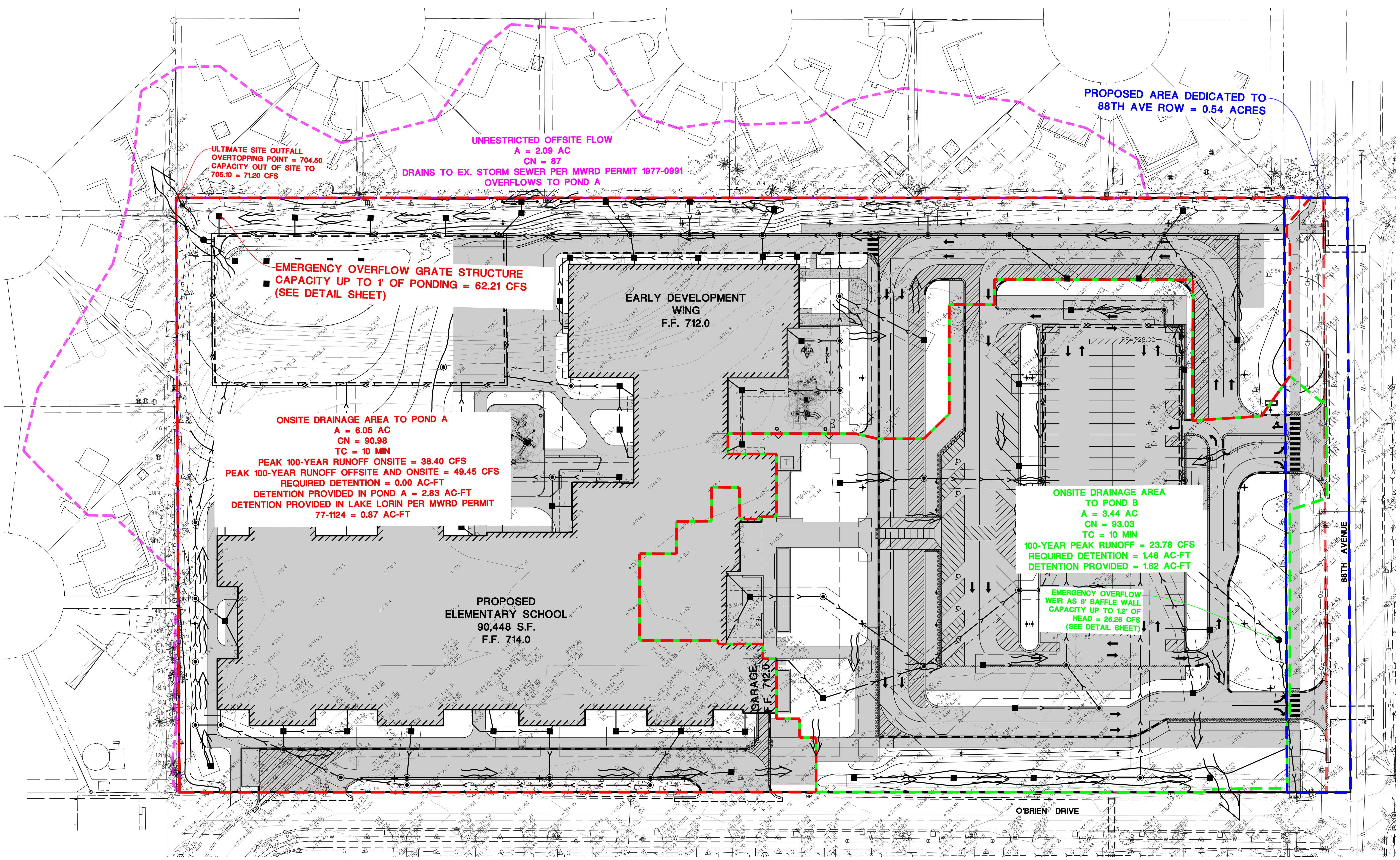
Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	D	98	2.49	244.02
Pervious Area	D	80	0.95	76.00
		TOTALS:	3.44	320.02

COMPOSITE RUNOFF CURVE NUMBER

Composite CN = Total Product / Total Area = 320.02 / 3.44 → Composite CN = 93.03

N

0 20 40 80
SCALE: 1"=40'



TRIA ARCHITECTURE

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KIRBY SCHOOL DISTRICT 140
2023
NEW FERNWAY PARK ELEMENTARY SCHOOL
16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

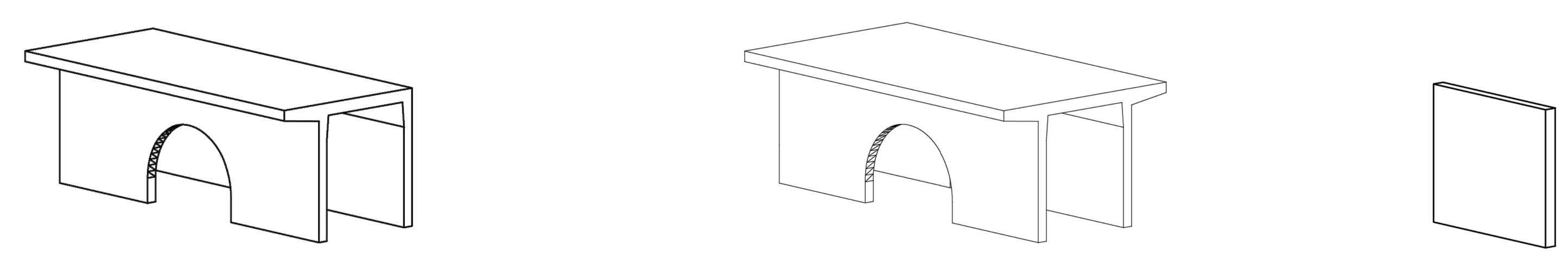
PROJECT NUMBER: 21-054.1
PROJECT MANAGER: MG
DRAWN BY:

ISSUED FOR BID:
10/30/2023

REVISIONS: 1 2 3 4 5

MWRD PROPOSED DRAINAGE
EXHIBIT - ALTERNATE #1

C18.00.1



NOTES:
1. OPENING LOCATIONS AND SHAPES MAY VARY.
2. SP – INDICATES A MODULE WITH MODIFICATIONS.
3. P – INDICATES A MODULE WITH A PANEL ATTACHMENT.
4. POCKET WINDOW OPENINGS ARE OPTIONAL.

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SCALE: NTS
SHEET TITLE: SINGLETRAP MODULE TYPES
SHEET NUMBER: 7.0

StormTrap®
MODULAR CONCRETE STORMWATER MANAGEMENT

THE STORMTRAP DRAWINGS SHALL NOT BE ALTERED OR MANIPULATED IN WHOLE OR IN PART WITHOUT WRITTEN CONSENT OF STORMTRAP. USE OF THESE DRAWINGS IS STRICTLY GRANTED TO YOU, OUR CLIENT, FOR THE SPECIFIED AND NAMED PROJECT ONLY. **THESE DRAWINGS ARE FOR YOUR REFERENCE ONLY AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES.**

SHEET INDEX

PAGE	DESCRIPTION
0.0	COVER SHEET
1.0	SINGLETRAP DESIGN CRITERIA
2.0	SINGLETRAP SYSTEM LAYOUT
2.1	SINGLETRAP FOUNDATION LAYOUT
3.0	SINGLETRAP INSTALLATION SPECIFICATIONS
3.1	SINGLETRAP INSTALLATION SPECIFICATIONS
4.0	SINGLETRAP BACKFILL SPECIFICATIONS
5.0	RECOMMENDED PIPE/ACCESS OPENING SPECIFICATIONS
6.0	SINGLETRAP MODULE TYPES

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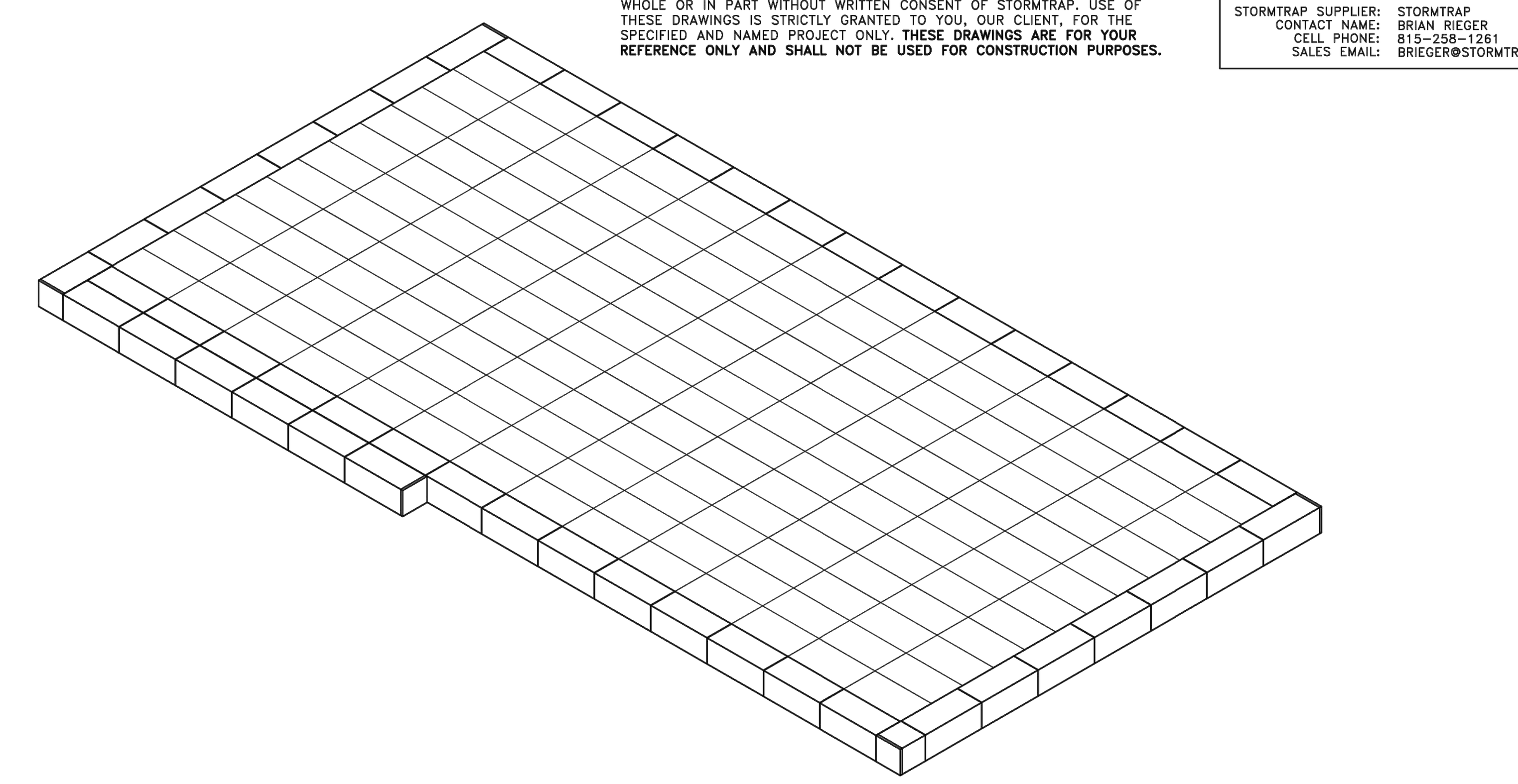
CONTACT NAME: BRIAN RIEGER
CELL PHONE: 815-258-1261
SALES EMAIL: BRIEGER@STORMTRAP.COM



FERNWAY PARK ELEMENTARY - POND A NW BASIN
ORLAND PARK, IL

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SCALE: NTS
SHEET TITLE: COVER SHEET
SHEET NUMBER: 0.0

STRUCTURAL DESIGN LOADING CRITERIA

LIVE LOADING: **AASHTO HS-20 HIGHWAY LOADING**
GROUND WATER TABLE: 693.40
SOIL BEARING PRESSURE: 3000PSF
SOIL DENSITY: 120 PCF
EQUIVALENT UNSATURATED LATERAL ACTIVE EARTH PRESSURE: 35 PSF / FT.
EQUIVALENT SATURATED LATERAL ACTIVE EARTH PRESSURE: 80 PSF/FT. (IF WATER TABLE PRESENT)
APPLICABLE CODES: ASTM C857
ACI-318
BACKFILL TYPE: SEE SHEET 4.0 FOR BACKFILL OPTIONS

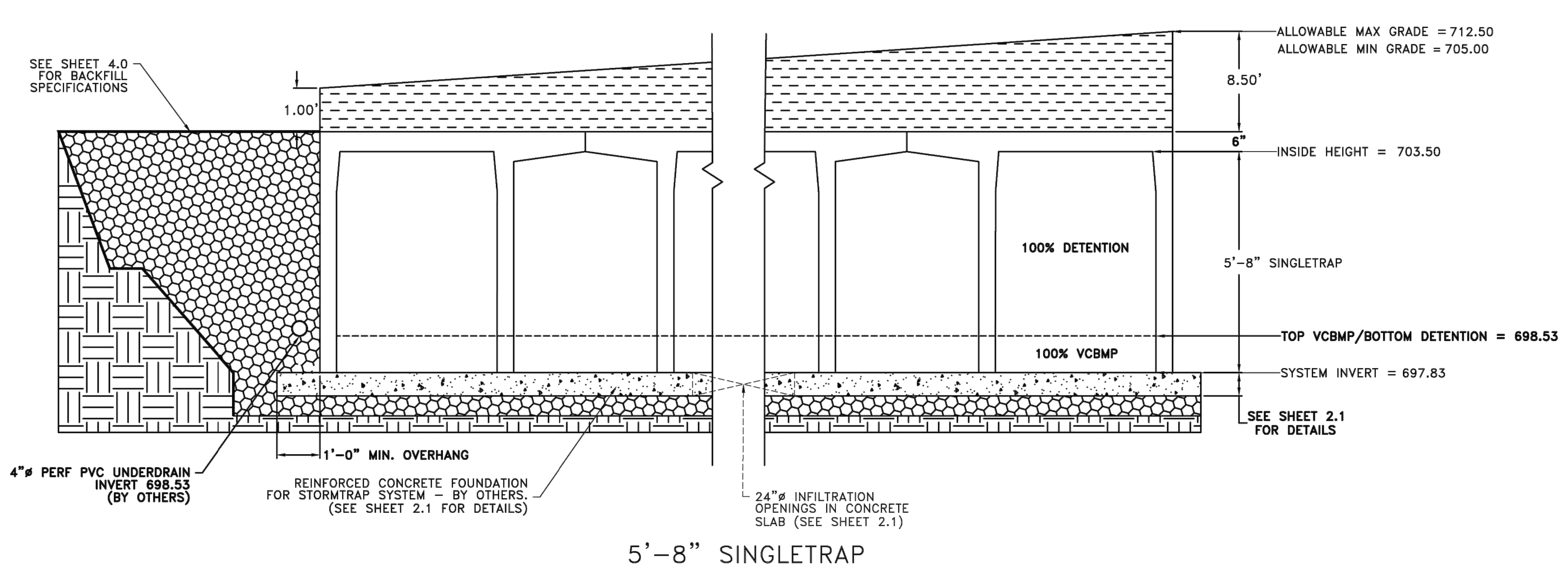
STORMTRAP SYSTEM INFORMATION
UNIT HEADROOM: 5'-8" SINGLETRAP

SITE SPECIFIC DESIGN CRITERIA
1. STORMTRAP UNITS SHALL BE MANUFACTURED AND INSTALLED ACCORDING TO SHOP DRAWINGS APPROVED BY THE INSTALLING CONTRACTOR AND ENGINEER OF RECORD. THE SHOP DRAWINGS SHALL INDICATE SIZE AND LOCATION OF ROOF OPENINGS AND INLET/ OUTLET PIPE TYPES, SIZES, INVERT ELEVATIONS AND SIZE OF OPENINGS.
2. COVER RANGE: MIN. 1.00' MAX. 8.50' CONSULT STORMTRAP FOR ADDITIONAL COVER OPTIONS.
3. ALL DIMENSIONS AND SOIL CONDITIONS, INCLUDING BUT NOT LIMITED TO GROUNDWATER AND SOIL BEARING CAPACITY ARE REQUIRED TO BE VERIFIED IN THE FIELD BY OTHERS PRIOR TO STORMTRAP INSTALLATION.
4. FOR STRUCTURAL CALCULATIONS THE GROUND WATER TABLE IS ASSUMED TO BE 693.40 IF WATER TABLE IS DIFFERENT THAN ASSUMED, CONTACT STORMTRAP.
5. SYSTEM DESIGN MAY ALLOW FOR INCIDENTAL LEAKAGE AND WILL NOT BE SUBJECT TO LEAKAGE TESTING.

VCBMP VOLUME CALCULATION
- TOTAL VCBMP STORAGE REQUIRED = 17,381.00 CUBIC FEET
- TOTAL VCBMP STORAGE PROVIDED = 17,422.43 CUBIC FEET (ELEV 698.53 – ELEV 697.83, 100% IN SYSTEM)

DETENTION VOLUME CALCULATION
- TOTAL WATER STORAGE REQUIRED = 123,275.00 CUBIC FEET
- TOTAL WATER STORAGE PROVIDED = 123,699.24 CUBIC FEET (ELEV 703.50 – ELEV 698.53, 100% IN SYSTEM)

SEASONAL HIGH WATER TABLE
- SHWT = 693.40' (ELEVATION) *TO BE VERIFIED BY OTHERS
- VCBMP BOTTOM TO SHWT = 4.43' (DISTANCE)
- AMOUNT OF NATIVE SOIL ABOVE SHWT = 4.43' (DISTANCE)



5'-8" SINGLETRAP

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PROJECT INFORMATION:
FERNWAY PARK
ELEMENTARY
POND A NW BASIN
ORLAND PARK, IL

CURRENT ISSUE DATE: 10/26/2023
ISSUED FOR: PRELIMINARY

REV.	DATE:	ISSUED FOR:	DWN BY:
△	10/26/2023	PRELIMINARY	JPH
1	6/19/2023	PRELIMINARY	JH

SCALE: NTS
SHEET TITLE: SINGLETRAP DESIGN CRITERIA
SHEET NUMBER: 1.0

BILL OF MATERIALS

QTY.	UNIT TYPE	DESCRIPTION	WEIGHT
168	I	5'-8" SINGLETRAP	15900
0	II	5'-8" SINGLETRAP	18762
45	III	5'-8" SINGLETRAP	16254
3	IV	5'-8" SINGLETRAP	17685
0	VII	5'-8" SINGLETRAP	0
2	SPIV	5'-8" SINGLETRAP	VARIES
0	T2 PANEL	6" THICK PANEL	3893
5	T4 PANEL	6" THICK PANEL	3065
0	T7 PANEL	6" THICK PANEL	0
40	JOINTWRAP	150' PER ROLL	
64	JOINTTAPE	14.5' PER ROLL	
TOTAL PIECES = 218			
TOTAL PANELS = 5			
HEAVIEST PICK WEIGHT = 17,685			

LOADING DISCLAIMER:

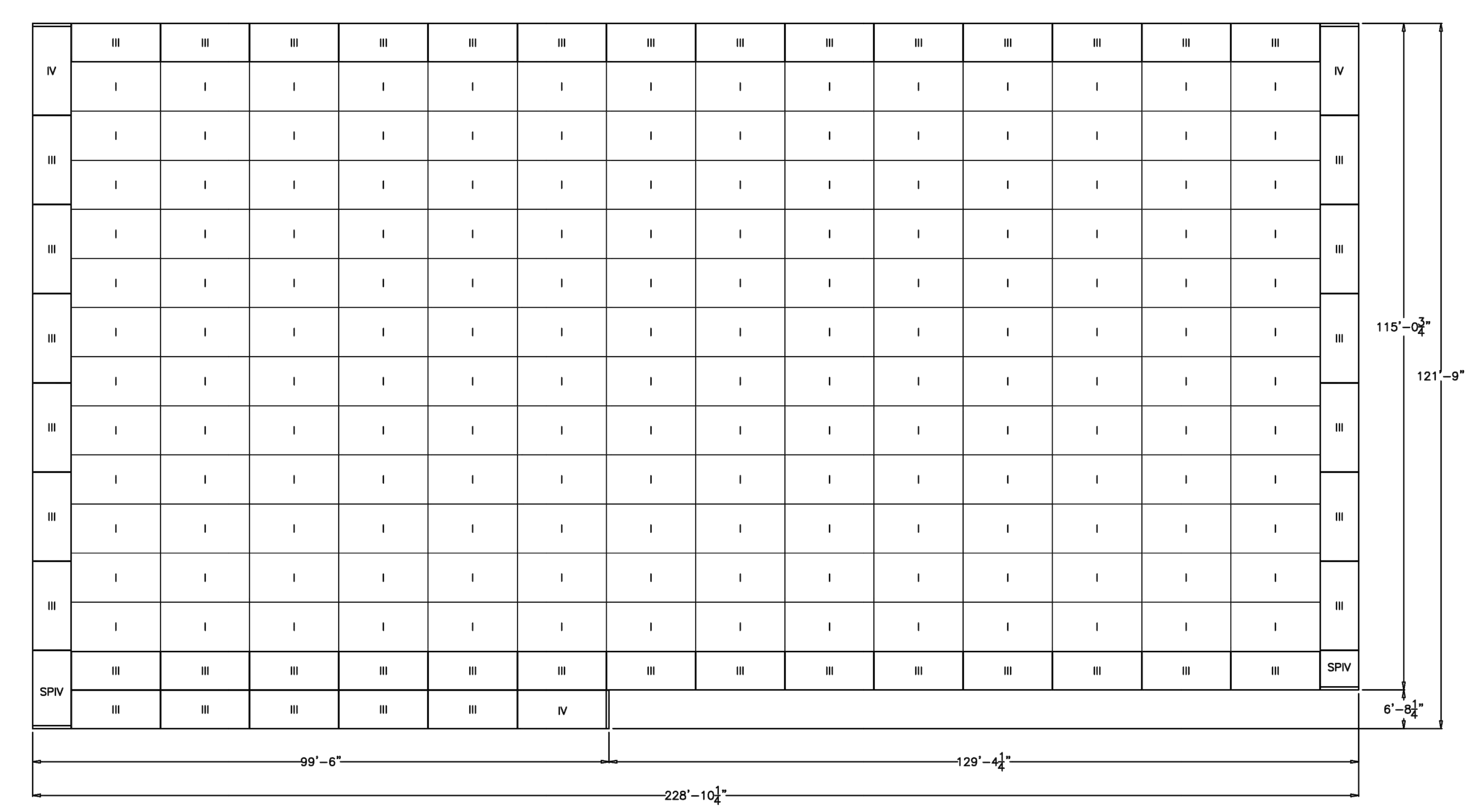
STORMTRAP IS NOT DESIGNED TO ACCEPT ANY ADDITIONAL LOADINGS FROM NEARBY STRUCTURES NEXT TO OR OVER THE TOP OF STORMTRAP. IF ADDITIONAL LOADING CONSIDERATIONS ARE REQUIRED FOR STRUCTURAL DESIGN OF STORMTRAP, PLEASE CONTACT STORMTRAP IMMEDIATELY.

TREE LOADING DISCLAIMER:

THE STORMTRAP SYSTEM HAS NOT BEEN DESIGNED TO SUPPORT THE ADDITIONAL WEIGHT OF ANY TREES. FURTHERMORE, THE ROOTS OF THE TREES MUST BE CONTAINED TO PREVENT FUTURE DAMAGE TO THE STORMTRAP SYSTEM. STORMTRAP ACCEPTS NO LIABILITY FOR DAMAGES CAUSED BY TREES OR OTHER VEGETATION PLACE AROUND OR ON TOP OF THE SYSTEM.

DESIGN CRITERIA
ALLOWABLE MAX GRADE = 712.50
ALLOWABLE MIN GRADE = 705.00
INSIDE HEIGHT ELEVATION = 703.50
SYSTEM INVERT = 697.83

NOTES:
1. DIMENSIONING OF STORMTRAP SYSTEM SHOWN BELOW ALLOW FOR A 3/4" GAP BETWEEN EACH MODULE.
2. ALL DIMENSIONS TO BE VERIFIED IN THE FIELD BY OTHERS.
3. SEE SHEET 3.0 FOR INSTALLATION SPECIFICATIONS.
4. SP – INDICATES A MODULE WITH MODIFICATIONS.
5. P – INDICATES A MODULE WITH A PANEL ATTACHMENT.
6. CONTRACTORS RESPONSIBILITY TO ENSURE CONSISTENCY/ACCURACY TO FINAL ENGINEER OF RECORD PLAN SET.



ENGINEER INFORMATION:
Manhard Consulting
700 SPRINGER RD
Lombard, IL
630-691-8500

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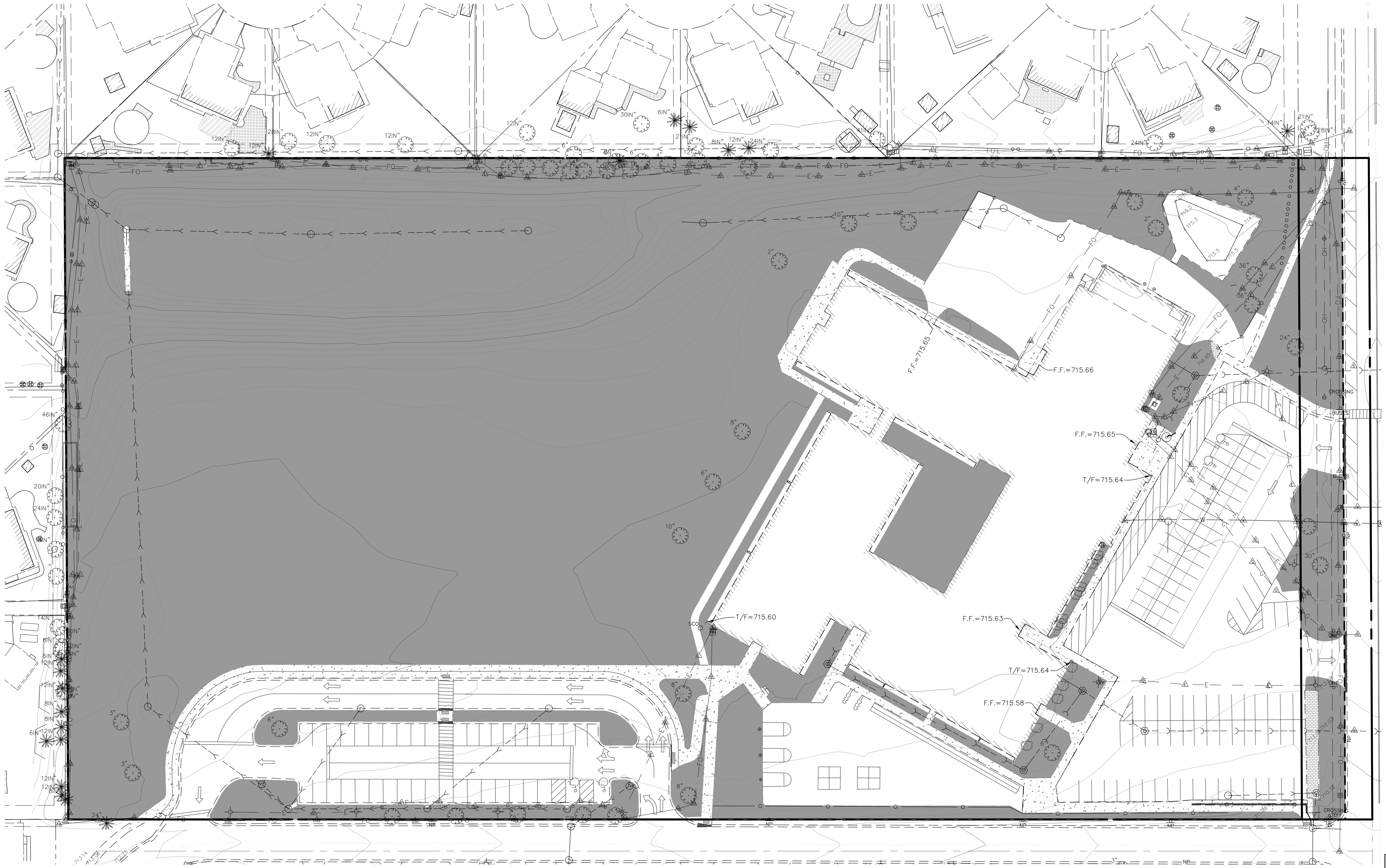
SCALE: NTS
SHEET TITLE: SINGLETRAP SYSTEM LAYOUT
SHEET NUMBER: 2.0

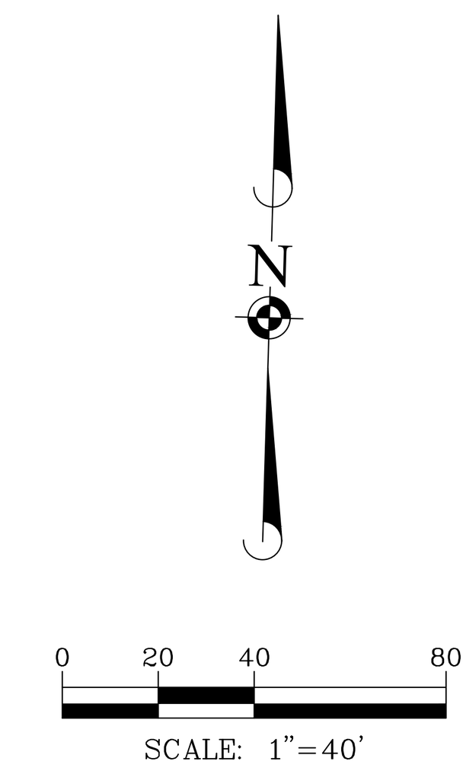
TRIA ARCHITECTURE

KIRBY SCHOOL DISTRICT 140
2023
NEW FERNWAY PARK ELEMENTARY SCHOOL
16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

STORM TRAP DETAILS

C19.00





01-01-16

SITE DATA	
ONSITE IMPERVIOUS AREA	40.71%
COMPOSITE CN	87.33
COMPOSITE C	0.63

LEGEND

PROPERTY AREA: 9.80 ACRES

TOTAL PERVIOUS AREA: 5.81 ACRES
CN = 80
C = 0.45

TOTAL IMPERVIOUS AREA: 3.99 ACRES
CN = 98
C = 0.90

TRIA ARCHITECTURE

CIVIL/LANSCAPE CONSULTANT:
Manhard Consulting
One Overlook Point, Suite 290
Lincolnshire, IL 60069
(P) (847) 634-5550

STRUCTURAL CONSULTANT:
Larson Engineering, Inc.
1488 BOND STREET, SUITE 100
NAPERVILLE, ILLINOIS 60563-6503
ILLINOIS LICENSE NO 184-001442
LEI COMM. NO 21160576.000
(P) 630.357.0540
(F) 630.357.0164

M.E.P./F.P. CONSULTANT:
OAS
O'Higgins & Arnold Sustainability, LLC
769 HEARTLAND DR., UNIT A SUGAR GROVE, ILLINOIS 60554

KIRBY SCHOOL DISTRICT 140
2023
NEW FERNWAY PARK ELEMENTARY SCHOOL
16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

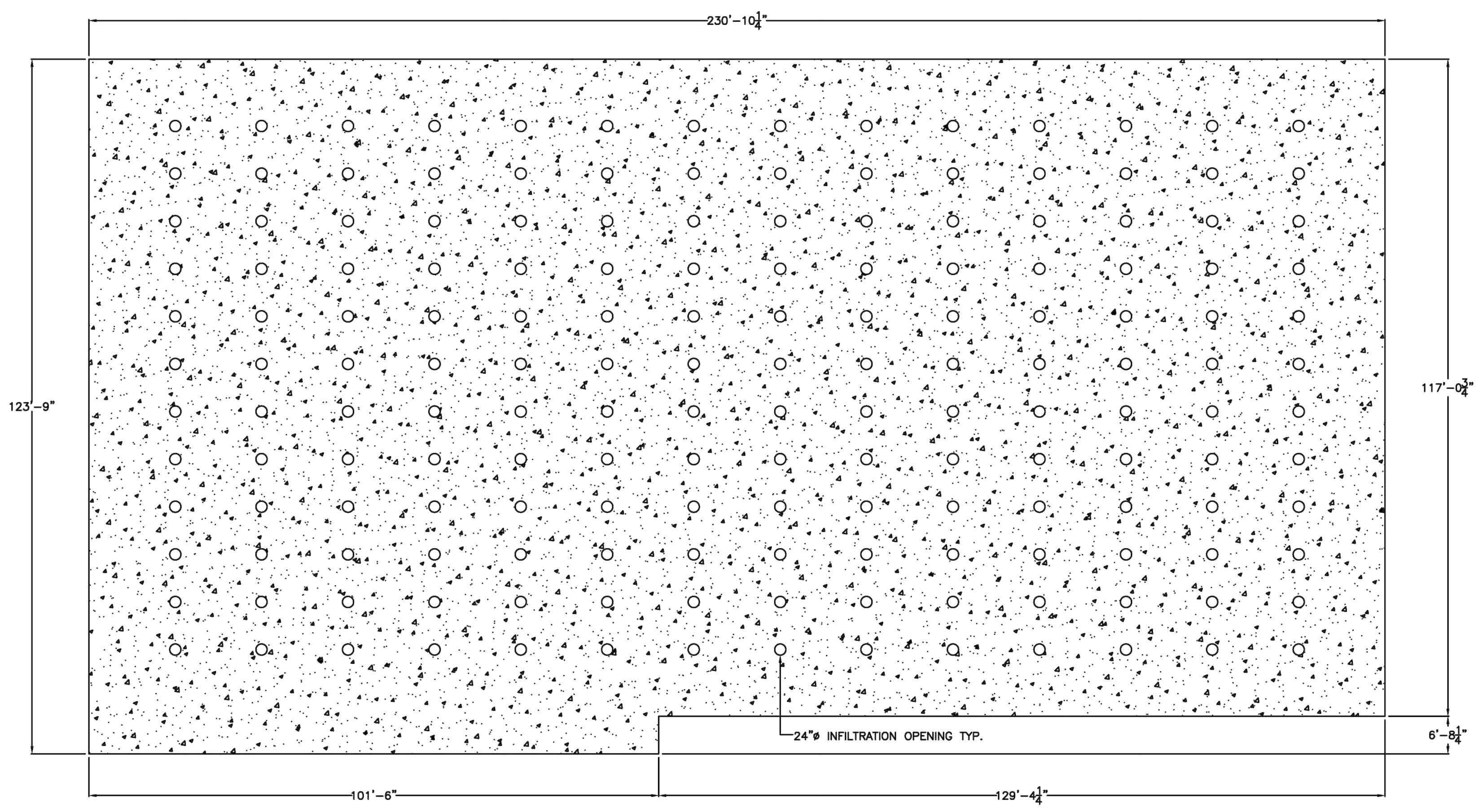
PROJECT NUMBER: 21-054.1
PROJECT MANAGER: MG
DRAWN BY:

ISSUED FOR BID:
10/30/2023

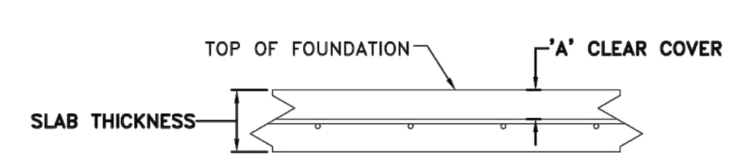
REVISIONS: 1 2 3 4 5

MWRD EXISTING IMPERVIOUS EXHIBIT - ALTERNATE #1

C19.00.1



CONCRETE FOUNDATION NOTES:
1. CONCRETE FOUNDATION TO BE SUPPLIED AND INSTALLED BY OTHERS.
2. CONCRETE STRENGTH @ 28 DAYS, 5%-8% ENTRAINED AIR, 4" MAX SLUMP.
3. NET ALLOWABLE SOIL PRESSURE AS INDICATED ON SHEET 1.0.
4. SOIL CONDITIONS TO BE VERIFIED ON SITE BY OTHERS.
5. REBAR: ASTM A615 GRADE 60, BLACK BAR.
6. DIMENSION OF FOUNDATION MUST HAVE 1'-0" OVERHANG BEYOND EXTERNAL FACE OF MODULE.
7. DIMENSION OF STORMTRAP SYSTEM ALLOW FOR A 3/4" GAP BETWEEN EACH MODULE.
8. ALL DIMENSIONS TO BE VERIFIED IN THE FIELD BY OTHERS.
9. SEE SHEET 3.0 FOR INSTALLATION SPECIFICATIONS.



STORMTRAP FOUNDATION DETAIL

HS-20 & HS-25 LOADING - (ACI 318, ST2)

MAXIMUM SYSTEM COVER	SLAB THICKNESS	CONCRETE STRENGTH	REINFORCEMENT (BOTH DIRECTIONS)	'A' CLEAR COVER
0'-6" - 1'-0"	8"	4000 PSI	#4 @ 18" O.C.	3.5"
1'-1" - 2'-0"	8"	4000 PSI	#4 @ 16" O.C.	3.5"
2'-1" - 3'-0"	8"	4000 PSI	#4 @ 12" O.C.	3.5"
3'-1" - 4'-0"	8"	4000 PSI	#4 @ 12" O.C.	3.5"
4'-1" - 5'-0"	8"	4000 PSI	#5 @ 18" O.C.	3.375"
5'-1" - 6'-0"	8"	4000 PSI	#5 @ 16" O.C.	3.375"
6'-1" - 7'-0"	8"	4000 PSI	#5 @ 12" O.C.	3.375"
7'-1" - 8'-0"	9"	4000 PSI	#5 @ 12" O.C.	3.875"
8'-1" - 9'-0"	9"	4000 PSI	#5 @ 12" O.C.	3.875"
9'-1" - 10'-0"	9"	4000 PSI	#5 @ 12" O.C.	3.875"

StormTrap
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ENGINEER INFORMATION:
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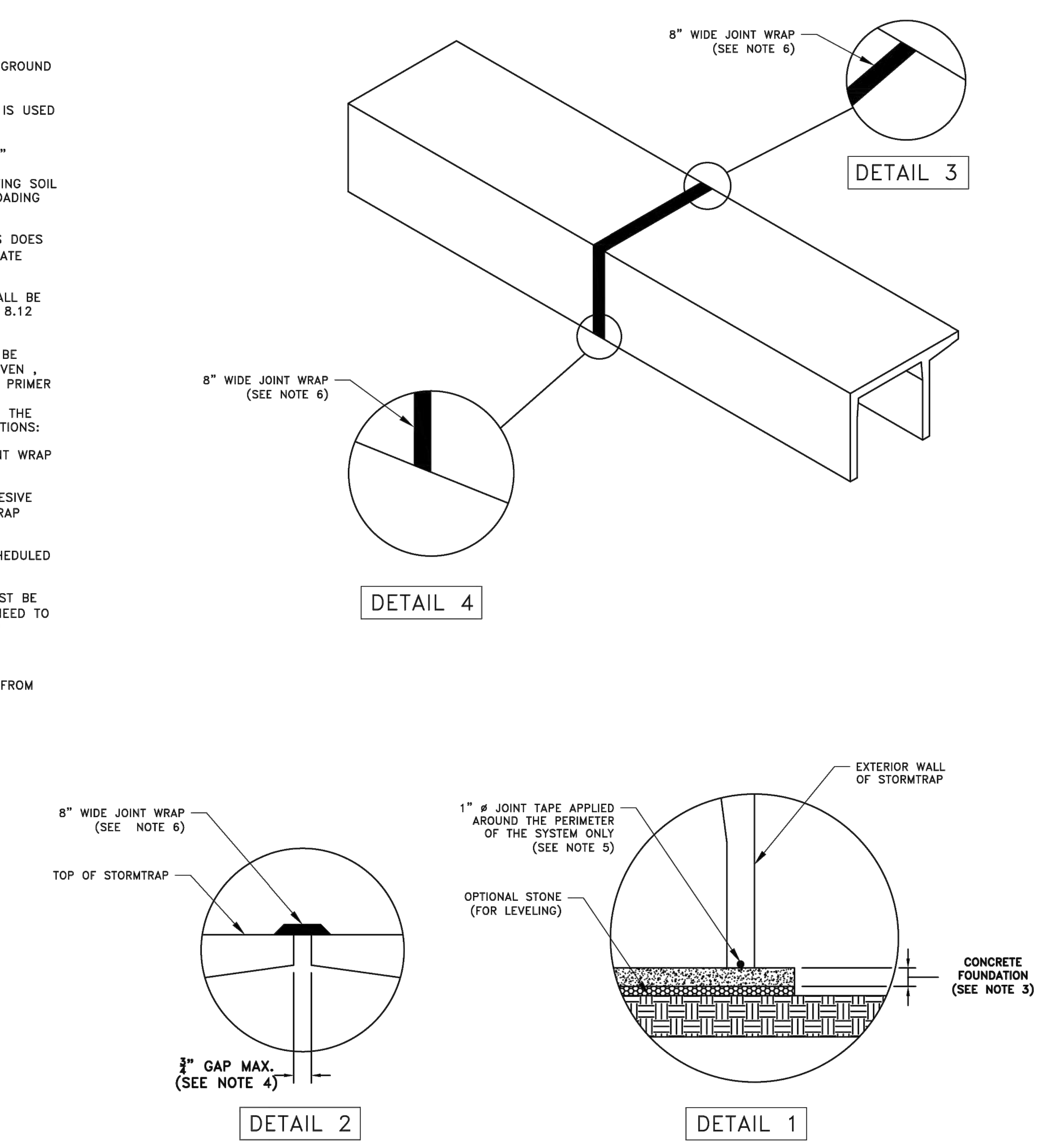
SCALE: NTS

SHEET TITLE: SINGLETRAP FOUNDATION LAYOUT

SHEET NUMBER: 2.1

STORMTRAP INSTALLATION SPECIFICATIONS

1. STORMTRAP SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C891, STANDARD FOR INSTALLATION OF UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES, THE FOLLOWING ADDITIONS AND/OR EXCEPTIONS SHALL APPLY:
2. IT IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR TO ENSURE THAT PROPER/ADEQUATE EQUIPMENT IS USED TO SET/INSTALL THE MODULES.
3. STORMTRAP MODULES SHALL BE PLACED ON A LEVEL CONCRETE FOUNDATION (SEE SHEET 2.1) WITH A 1'-0" OVERHANG ON ALL SIDES THAT SHALL BE POURED IN PLACE BY INSTALLING CONTRACTOR. A QUALIFIED GEOTECHNICAL ENGINEER WILL BE EMPLOYED, BY OWNER, TO PROVIDE ASSISTANCE IN EVALUATING THE EXISTING SOIL CONDITIONS TO ENSURE THAT THE SOIL BEARING PRESSURE MEETS OR EXCEEDS THE STRUCTURAL DESIGN LOADING CRITERIA AS SPECIFIED ON SHEET 1.0.
4. THE STORMTRAP MODULES SHALL BE PLACED SUCH THAT THE MAXIMUM SPACE BETWEEN ADJACENT MODULES DOES NOT EXCEED ¾" (SEE DETAIL 2). IF THE SPACE EXCEEDS ¾", THE MODULES SHALL BE RESET WITH APPROPRIATE ADJUSTMENT MADE TO LINE AND GRADE TO BRING THE SPACE INTO SPECIFICATION.
5. THE PERIMETER HORIZONTAL JOINT BETWEEN THE STORMTRAP MODULES AND THE CONCRETE FOUNDATION SHALL BE SEALED TO THE FOUNDATION WITH PRE-FORMED MASTIC JOINT SEALER ACCORDING TO ASTM C891, 8.8 AND 8.12 (SEE DETAIL 1). THE MASTIC JOINT TAPE DOES NOT PROVIDE A WATERTIGHT SEAL.
6. ALL EXTERIOR ROOF AND EXTERIOR VERTICAL WALL JOINTS BETWEEN ADJACENT STORMTRAP MODULES SHALL BE SEALED WITH 8" WIDE PRE-FORMED, COLD-APPLIED, SELF-ADHERING ELASTOMERIC RESIN, BONDED TO A WOVEN , HIGHLY PUNCTURE RESISTANT POLYMER WRAP, CONFORMING TO ASTM C891 AND SHALL BE INTEGRATED WITH PRIMER SEALANT AS APPROVED BY STORMTRAP (SEE DETAILS 2, 3, & 4). THE JOINT WRAP DOES NOT PROVIDE A WATERTIGHT SEAL. THE SOLE PURPOSE OF THE JOINT WRAP IS TO PROVIDE A SILT AND SOIL TIGHT SYSTEM. THE ADHESIVE EXTERIOR JOINT WRAP SHALL BE INSTALLED ACCORDING TO THE FOLLOWING INSTALLATION INSTRUCTIONS:
   - 6.1. USE A BRUSH OR WET CLOTH TO THOROUGHLY CLEAN THE OUTSIDE SURFACE AT THE POINT WHERE JOINT WRAP IS TO BE APPLIED.
   - 6.2. A RELEASE PAPER PROTECTS THE ADHESIVE SIDE OF THE JOINT WRAP. PLACE THE ADHESIVE TAPE (ADHESIVE SIDE DOWN) AROUND THE STRUCTURE, REMOVING THE RELEASE PAPER AS YOU GO. PRESS THE JOINT WRAP FIRMLY AGAINST THE STORMTRAP MODULE SURFACE WHEN APPLYING.
7. IF THE CONTRACTOR NEEDS TO CANCEL ANY SHIPMENTS, THEY MUST DO SO 48 HOURS PRIOR TO THEIR SCHEDULED ARRIVAL AT THE JOB SITE. IF CANCELED AFTER THAT TIME, PLEASE CONTACT THE PROJECT MANAGER.
8. IF THE STORMTRAP MODULE(S) IS DAMAGED IN ANY WAY PRIOR, DURING, OR AFTER INSTALL, STORMTRAP MUST BE CONTACTED IMMEDIATELY TO ASSESS THE DAMAGE AND DETERMINE WHETHER OR NOT THE MODULE(S) WILL NEED TO BE REPLACED. IF ANY MODULE ARRIVES AT THE JOBSITE DAMAGED DO NOT UNLOAD IT; CONTACT STORMTRAP IMMEDIATELY. ANY DAMAGE NOT REPORTED BEFORE THE TRUCK IS UNLOADED WILL BE THE CONTRACTOR'S RESPONSIBILITY.
9. STORMTRAP MODULES CANNOT BE ALTERED IN ANY WAY AFTER MANUFACTURING WITHOUT WRITTEN CONSENT FROM STORMTRAP.



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ENGINEER INFORMATION:
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630-691-8500

PROJECT INFORMATION:
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POND A NW BASIN
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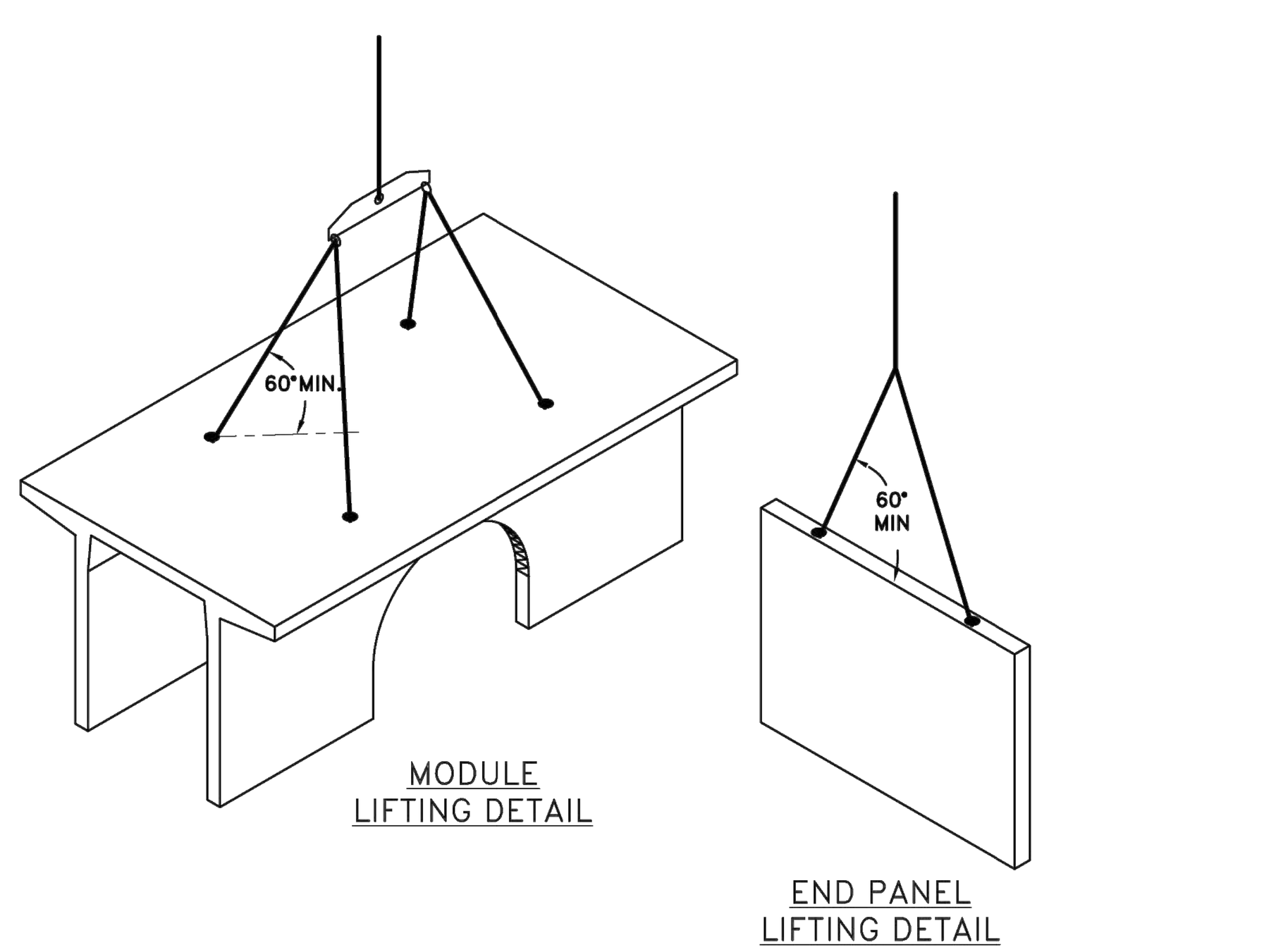
SCALE: NTS

SHEET TITLE: SINGLETRAP INSTALLATION SPECIFICATIONS

SHEET NUMBER: 3.0

STORMTRAP MODULE LIFTING INSTALLATION NOTES

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT ALL (4) CHAINS/CABLES ARE SECURED PROPERLY TO THE LIFTING ANCHORS AND IN EQUAL TENSION WHEN LIFTING THE STORMTRAP MODULE (SEE RECOMMENDATIONS 2 & 3).
2. MINIMUM 7'-0" CHAIN/CABLE LENGTH TO BE USED TO LIFT STORMTRAP MODULES (SUPPLIED BY CONTRACTOR).
3. CONTRACTOR TO ENSURE MINIMUM LIFTING ANGLE IS 60° FROM TOP SURFACE OF STORMTRAP MODULE. SEE DETAIL.
4. IT IS UNDERSTOOD AND AGREED THAT AT ALL TIMES DURING WHICH HOISTING AND RIGGING EQUIPMENT IS BEING SUPPLIED TO THE PURCHASER, OPERATOR OF SUCH EQUIPMENT SHALL BE IN CHARGE OF HIS ENTIRE EQUIPMENT AND SHALL AT ALL TIMES BE THE JUDGE OF THE SAFETY AND PROPERTY OF ANY SUGGESTION TO HIM FROM THE SELLER, ITS AGENTS OR EMPLOYEES. PURCHASER AGREES TO SAVE, INDEMNIFY AND HOLD HARMLESS SELLER FROM ALL LOSS, CLAIMS, DEMANDS OR CAUSES OF ACTION, WHICH MAY ARISE FROM THE EXISTENCE OR OPERATION OF SAID EQUIPMENT.

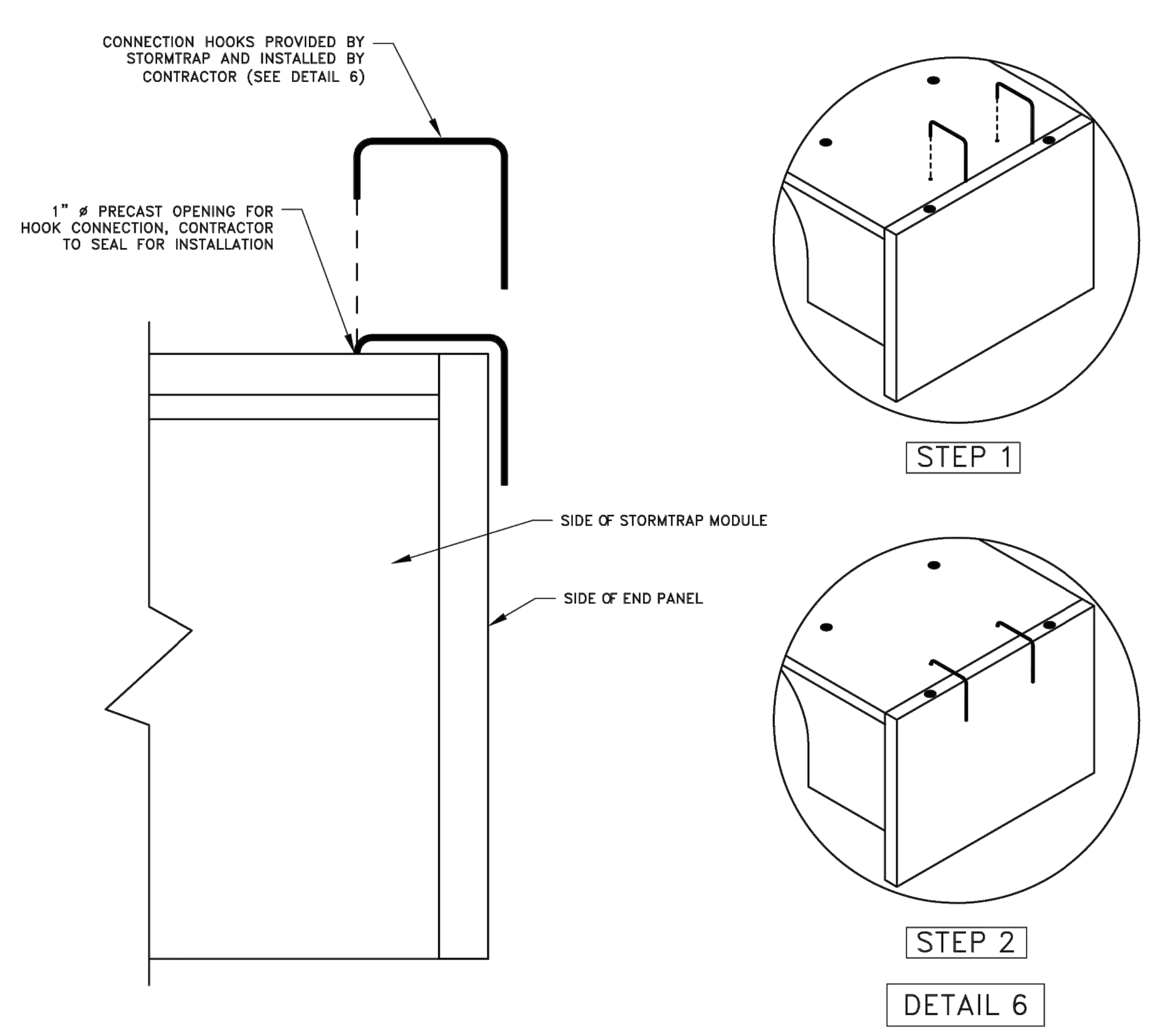


MODULE LIFTING DETAIL

END PANEL LIFTING DETAIL

END PANEL ERECTION/INSTALLATION NOTES

1. END PANELS WILL BE SUPPLIED TO CLOSE OFF OPEN ENDS OF ROWS.
2. PANELS SHALL BE INSTALLED IN A TILT UP FASHION DIRECTLY ADJACENT TO OPEN END OF MODULE (REFER TO SHEET 2.0 FOR END PANEL LOCATIONS).
3. CONNECTION HOOKS WILL BE SUPPLIED WITH END PANELS TO SECURELY CONNECT PANEL TO ADJACENT STORMTRAP MODULE (SEE PANEL CONNECTION ELEVATION VIEW).
4. ONCE CONNECTION HOOK IS ATTACHED, LIFTING CLUTCHES MAY BE REMOVED.
5. JOINT WRAP SHALL BE PLACED AROUND PERIMETER JOINT PANEL (SEE SHEET 3.0).



PANEL CONNECTION ELEVATION VIEW

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PROJECT INFORMATION:
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POND A NW BASIN
ORLAND PARK, IL

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SCALE: NTS

SHEET TITLE: SINGLETRAP INSTALLATION SPECIFICATIONS

SHEET NUMBER: 3.1

ZONE CHART

ZONES	ZONE DESCRIPTIONS	REMARKS
ZONE 1	FOUNDATION AGGREGATE	#5 (¾") STONE AGGREGATE (SEE NOTE 4 FOR DESCRIPTION)
ZONE 2	BACKFILL	UNIFIED SOILS CLASSIFICATION (GW, GP, SW, SP) OR SEE BELOW FOR APPROVED BACKFILL OPTIONS
ZONE 3	FINAL COVER OVERTOP	MATERIALS NOT TO EXCEED 120 PCF

FILL DEPTH	TRACK WIDTH	MAX VEHICLE WEIGHT (KIPS)	MAX GROUND PRESSURE
12"	12"	51.8	1690 psf
	18"	56.1	1219 psf
	24"	68.1	1111 psf
	30"	76.7	1000 psf
	36"	85.0	924 psf

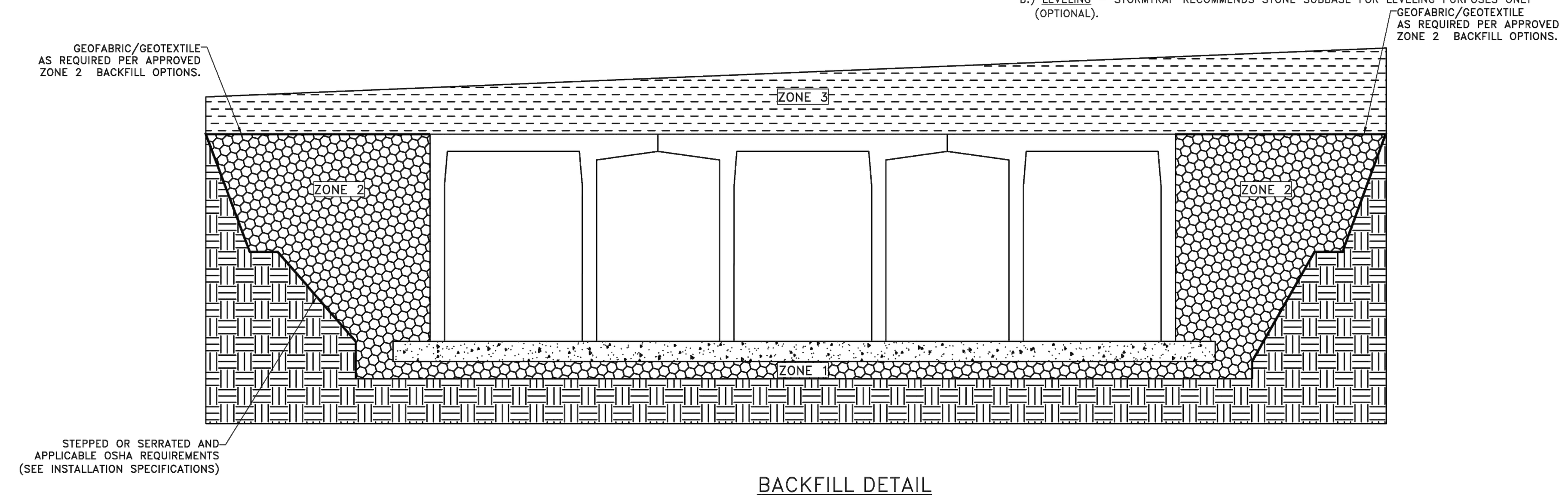
NOTE:
TRACK LENGTH NOT TO EXCEED 15'-4".
ONLY TWO TRACKS PER VEHICLE.

APPROVED ZONE 2 BACKFILL OPTIONS

OPTION	REMARKS
¾" STONE AGGREGATE	THE STONE AGGREGATE SHALL CONSIST OF CLEAN AND FREE DRAINING ANGULAR MATERIAL. THE SIZE OF THIS MATERIAL SHALL HAVE 100% PASSING THE 1" SIEVE WITH 0% TO 5% PASSING THE #8 SIEVE. THIS MATERIAL SHALL BE SEPARATED FROM NATIVE MATERIAL USING GEOFABRIC AROUND THE PERIMETER OF THE BACKFILL (ASTM SIZE #57) AS DETERMINED BY THE GEOTECHNICAL ENGINEER.
SAND	IMPORTED PURE SAND IS PERMITTED TO BE USED AS BACKFILL IF IT IS CLEAN AND FREE DRAINING. THE SAND USED FOR BACKFILLING SHALL HAVE LESS THAN 40% PASSING #40 SIEVE AND LESS THAN 5% PASSING #200 SIEVE. THIS MATERIAL SHALL BE SEPARATED FROM NATIVE MATERIAL USING GEOFABRIC AROUND THE PERIMETER OF THE SAND BACKFILL.
CRUSHED CONCRETE AGGREGATE	CLEAN, FREE DRAINING CRUSHED CONCRETE AGGREGATE MATERIAL CAN BE USED AS BACKFILL FOR STORMTRAP'S MODULES. THE SIZE OF THIS MATERIAL SHALL HAVE 100% PASSING THE 1" SIEVE WITH 0% TO 5% PASSING THE #8 SIEVE. THIS MATERIAL SHALL BE SEPARATED FROM NATIVE MATERIAL USING GEOFABRIC AROUND THE PERIMETER OF THE BACKFILL.
ROAD PACK	STONE AGGREGATE 100% PASSING THE 1-1/2" SIEVE WITH LESS THAN 12% PASSING THE #200 SIEVE (ASTM SIZE #467). GEOFABRIC AS PER GEOTECHNICAL ENGINEER RECOMMENDATION.

STORMTRAP ZONE INSTALLATION SPECIFICATIONS/PROCEDURES

1. THE FILL PLACED AROUND THE STORMTRAP MODULES MUST DEPOSITED ON BOTH SIDES AT THE SAME TIME AND TO APPROXIMATELY THE SAME ELEVATION. AT NO TIME SHALL THE FILL BEHIND ONE SIDE WALL BE MORE THAN 2'-0" HIGHER THAN THE FILL ON THE OPPOSITE SIDE. BACKFILL SHALL EITHER BE COMPACTED AND/OR VIBRATED TO ENSURE THAT BACKFILL AGGREGATE/STONE MATERIAL IS WELL SEATED AND PROPERLY INTER LOCKED. CARE SHALL BE TAKEN TO PREVENT ANY WEDGING ACTION AGAINST THE STRUCTURE, AND ALL SLOPES WITHIN THE AREA TO BE BACKFILLED MUST BE STEPPED OR SERRATED TO PREVENT WEDGING ACTION. CARE SHALL ALSO BE TAKEN AS NOT TO DISRUPT THE JOINT WRAP FROM THE JOINT DURING THE BACKFILL PROCESS. BACKFILL MUST BE FREE-DRAINING MATERIAL. SEE ZONE 2 BACKFILL CHART ON THIS PAGE FOR APPROVED BACKFILL OPTIONS. IF NATIVE EARTH IS SUSCEPTIBLE TO MIGRATION, CONFIRM WITH GEOTECHNICAL ENGINEER AND PROVIDE PROTECTION AS REQUIRED (PROVIDED BY OTHERS).
2. DURING PLACEMENT OF MATERIAL OVERTOP THE SYSTEM, AT NO TIME SHALL MACHINERY BE USED OVERTOP THAT EXCEEDS THE DESIGN LIMITATIONS OF THE SYSTEM. WHEN PLACEMENT OF MATERIAL OVERTOP, MATERIAL SHALL BE PLACED SUCH THAT THE DIRECTION OF PLACEMENT IS PARALLEL WITH THE OVERALL LONGITUDINAL DIRECTION OF THE SYSTEM WHENEVER POSSIBLE.
3. THE FILL PLACED OVERTOP THE SYSTEM SHALL BE PLACED AT A MINIMUM OF 6" LIFTS. AT NO TIME SHALL MACHINERY OR VEHICLES GREATER THAN THE DESIGN HS-20 LOADING CRITERIA TRAVEL OVERTOP THE SYSTEM WITHOUT THE MINIMUM DESIGN COVERAGE. IF TRAVEL IS NECESSARY OVERTOP THE SYSTEM PRIOR TO ACHIEVING THE MINIMUM DESIGN COVER, IT MAY BE NECESSARY TO REDUCE THE ULTIMATE LOAD/BURDEN OF THE OPERATING MACHINERY SO AS TO NOT EXCEED THE DESIGN CAPACITY OF THE SYSTEM. IN SOME CASES, IN ORDER TO ACHIEVE REQUIRED COMPACTION, HAND COMPACTION MAY BE NECESSARY IN ORDER NOT TO EXCEED THE ALLOTTED DESIGN LOADING. SEE CHART FOR TRACKED VEHICLE WIDTH AND ALLOWABLE MAXIMUM PRESSURE PER TRACK.
4. STONE AGGREGATE FOUNDATION IN ZONE 1 MAY BE REQUIRED FOR THE FOLLOWING:
   - A.) INFILTRATION - IF INFILTRATION IS REQUIRED, A FREE DRAINING MATERIAL SHALL BE USED AT A DEPTH DETERMINED BY THE EOR. FREE DRAINING AGGREGATE IS DEFINED AS 80% AGGREGATE RETAINED ON ½" SIEVE, MAJORITY OF AGGREGATE SIZE BETWEEN ½" AND 1", AND ONLY 5% OF MATERIAL PASSING #3/8" SIEVE.
   - B.) LEVELING - STORMTRAP RECOMMENDS STONE SUBBASE FOR LEVELING PURPOSES ONLY (OPTIONAL).



BACKFILL DETAIL

StormTrap
PATENTS LISTED AT: [HTTP://STORMTRAP.COM/PATENT]
1287 WINDHAM PARKWAY
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SCALE: NTS

SHEET TITLE: SINGLETRAP BACKFILL SPECIFICATIONS

SHEET NUMBER: 4.0

TRIA ARCHITECTURE

CIVIL/LANDSCAPE CONSULTANT: Manhard Consulting, Lincolnshire, IL (P) (847) 634-5550
STRUCTURAL CONSULTANT: Larson Engineering, Inc. (P) 630.357.0540 (F) 630.357.0164
MEP/FP CONSULTANT: DAS, D'Ambrosio & Associates Specifications, LLC, 769 HEARTLAND DR., UNIT A SUGAR GROVE, ILLINOIS 60554

KIRBY SCHOOL DISTRICT 140
2023
NEW FERNWAY PARK ELEMENTARY SCHOOL
16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

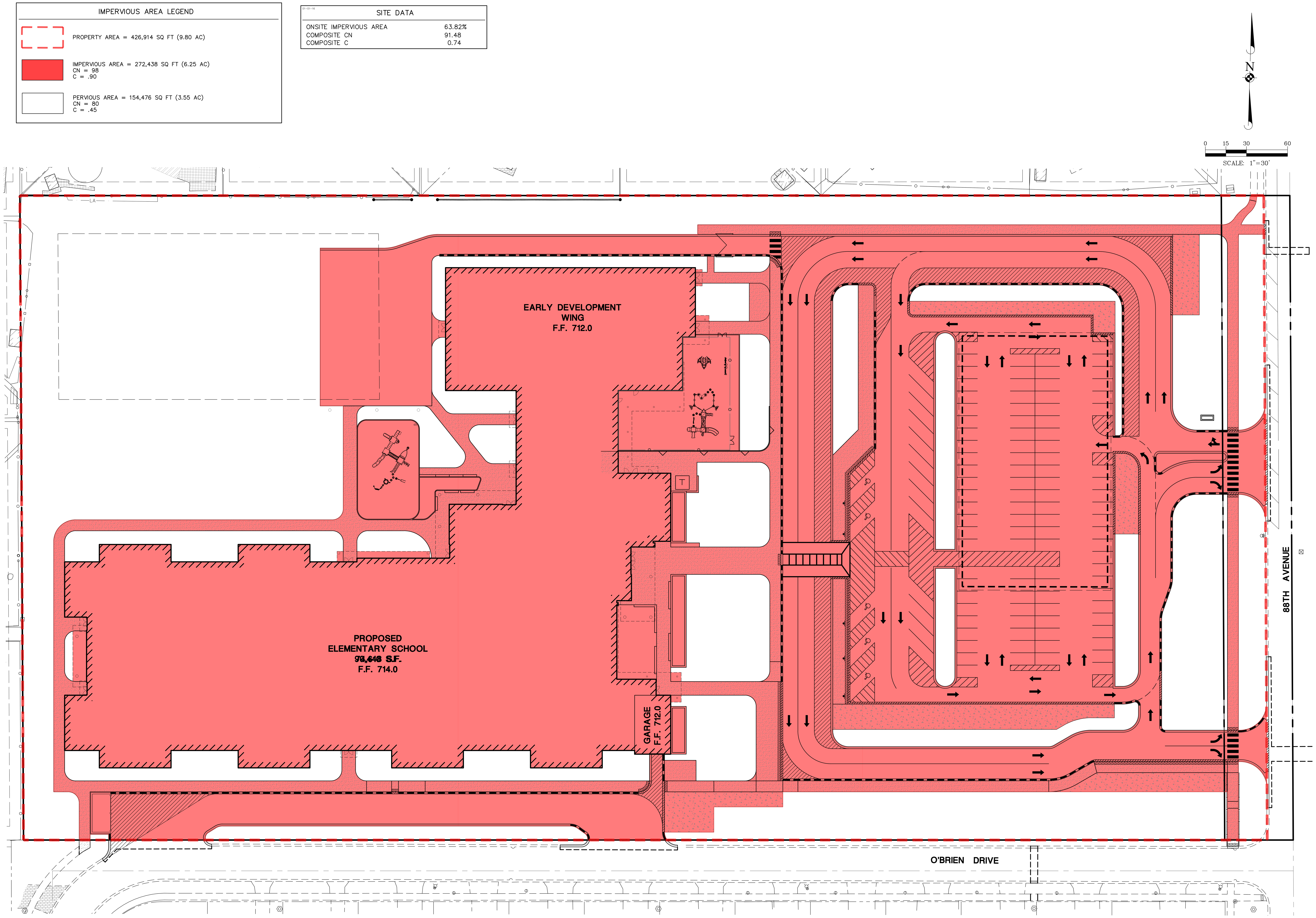
PROJECT NUMBER: 21-0541
PROJECT MANAGER: MG
DRAWN BY:
ISSUED FOR BID: 10/30/2023
REVISIONS:
STORM TRAP DETAILS

C20.00

IMPERVIOUS AREA LEGEND
PROPERTY AREA = 426,914 SQ FT (9.80 AC)
IMPERVIOUS AREA = 272,438 SQ FT (6.25 AC) CN = 98 C = .90
PERVIOUS AREA = 154,476 SQ FT (3.55 AC) CN = 80 C = .45

01-01-16

SITE DATA	
ONSITE IMPERVIOUS AREA	63.82%
COMPOSITE CN	91.48
COMPOSITE C	0.74



TRIA ARCHITECTURE

KIRBY SCHOOL DISTRICT 140

2023

NEW FERNWAY PARK ELEMENTARY SCHOOL

16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

MWRD PROPOSED IMPERVIOUS EXHIBIT - ALTERNATE #1

C20.00.1

RECOMMENDED ACCESS OPENING SPECIFICATION

1. A TYPICAL ACCESS OPENING FOR THE STORMTRAP SYSTEM ARE 2'–0" IN DIAMETER. ACCESS OPENINGS LARGER THAN 3'–0" IN DIAMETER NEED TO BE APPROVED BY STORMTRAP. ALL OPENINGS MUST RETAIN AT LEAST 1'–0" OF CLEARANCE FROM THE END OF THE STORMTRAP MODULE UNLESS NOTED OTHERWISE. ALL ACCESS OPENINGS TO BE LOCATED ON INSIDE LEG UNLESS OTHERWISE SPECIFIED.
2. PLASTIC COATED STEEL STEPS PRODUCED BY M.A. INDUSTRIES PART #PS3–PFC OR APPROVED EQUAL (SEE STEP DETAIL) ARE PROVIDED INSIDE ANY MODULE WHERE DEEMED NECESSARY. THE HIGHEST STEP IN THE MODULE IS TO BE PLACED A DISTANCE OF 1'–0" FROM THE INSIDE EDGE OF THE STORMTRAP MODULES. ALL ENSUING STEPS SHALL BE PLACED AT A DISTANCE BETWEEN 10" MIN AND 14" MAX BETWEEN THEM. STEPS MAY BE MOVED OR ALTERED TO AVOID OPENINGS OR OTHER IRREGULARITIES IN THE MODULE.
3. STORMTRAP LIFTING INSERTS MAY BE RELOCATED TO AVOID INTERFERENCE WITH ACCESS OPENINGS OR THE CENTER OF GRAVITY OF THE MODULE AS NEEDED.
4. STORMTRAP ACCESS OPENINGS MAY BE RELOCATED TO AVOID INTERFERENCE WITH INLET AND/OR OUTLET PIPE OPENINGS SO PLACEMENT OF STEPS IS ATTAINABLE.
5. ACCESS OPENINGS SHOULD BE LOCATED IN ORDER TO MEET THE APPROPRIATE MUNICIPAL REQUIREMENTS. STORMTRAP RECOMMENDS AT LEAST TWO ACCESS OPENINGS PER SYSTEM FOR ACCESS AND INSPECTION.
6. USE PRECAST ADJUSTING RINGS AS NEEDED TO MEET GRADE. STORMTRAP RECOMMENDS FOR COVER OVER 2' TO USE PRECAST BARREL OR CONE SECTIONS. (PROVIDED BY OTHERS)

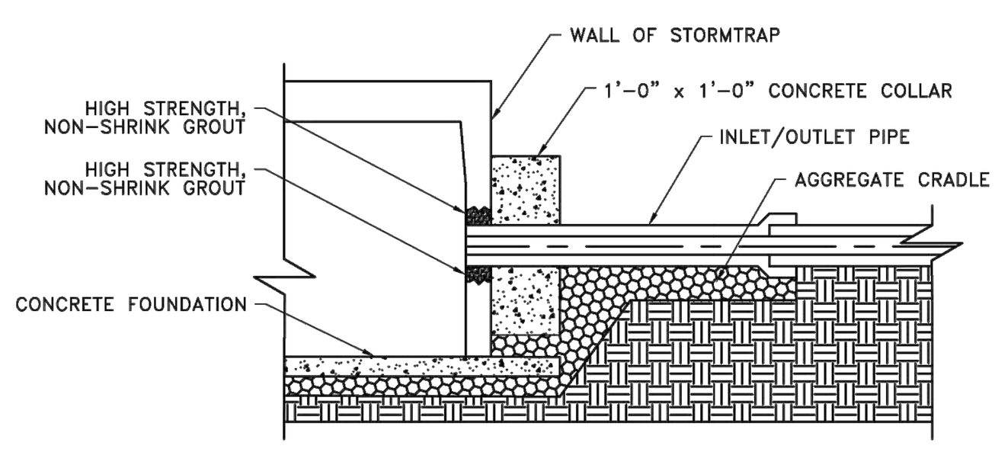
RECOMMENDED PIPE OPENING SPECIFICATION

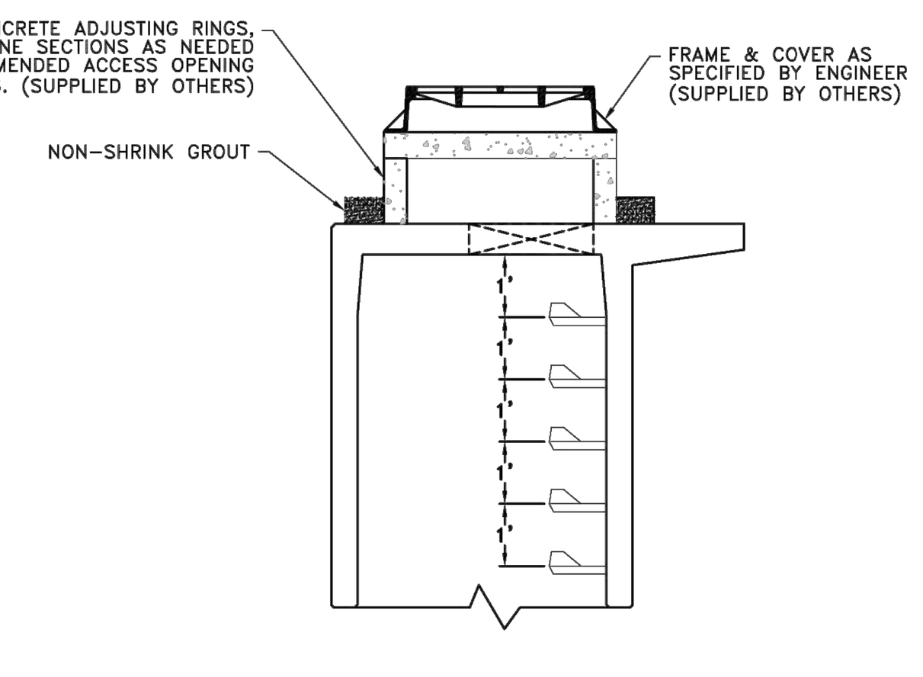
1. MINIMUM EDGE DISTANCE FOR AN OPENING ON THE OUTSIDE WALL SHALL BE NO LESS THAN 1'–0".
2. MAXIMUM OPENING SIZE TO BE DETERMINED BY THE MODULE HEIGHT. PREFERRED OPENING SIZE ø 36" OR LESS. ANY OPENING NEEDED THAT DOES NOT FIT THIS CRITERIA SHALL BE BROUGHT TO THE ATTENTION OF STORMTRAP FOR REVIEW.
3. CONNECTING PIPES SHALL BE INSTALLED WITH A 1'–0" CONCRETE COLLAR, AND AN AGGREGATE CRADLE FOR AT LEAST ONE PIPE LENGTH (SEE PIPE CONNECTION DETAIL). A STRUCTURAL GRADE CONCRETE OR HIGH STRENGTH, NON–SHRINK GROUT WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI SHALL BE USED.
4. THE ANNULAR SPACE BETWEEN THE PIPE AND THE HOLE SHALL BE FILLED WITH HIGH STRENGTH NON–SHRINK GROUT.

RECOMMENDED PIPE INSTALLATION INSTRUCTIONS

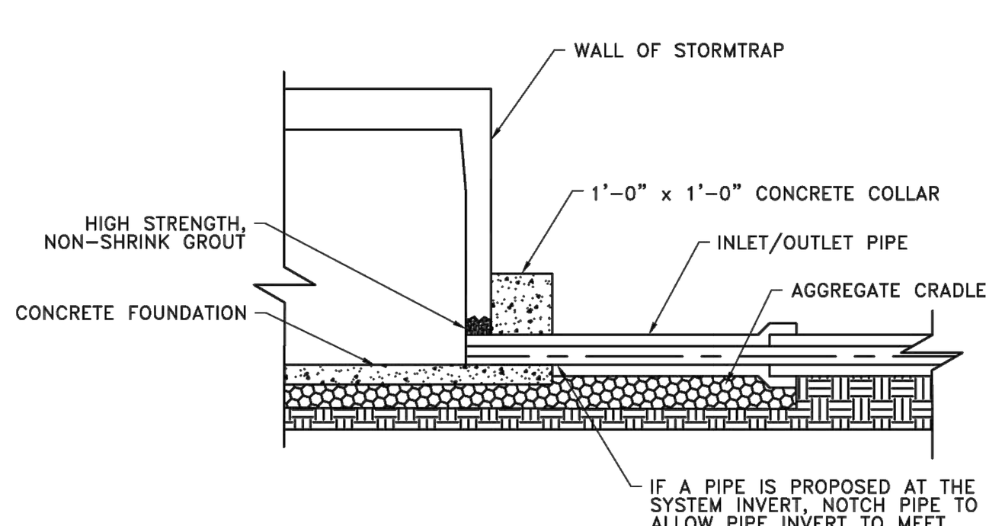
1. CLEAN AND LIGHTLY LUBRICATE ALL OF THE PIPE TO BE INSERTED INTO STORMTRAP.
2. IF PIPE IS CUT, CARE SHOULD BE TAKEN TO ALLOW NO SHARP EDGES. BEVEL AND LUBRICATE LEAD END OF PIPE.
3. ALIGN CENTER OF PIPE TO CORRECT ELEVATION AND INSERT INTO OPENING.

NOTE: ALL ANCILLARY PRODUCTS/SPECIFICATIONS RECOMMENDED AND SHOWN ON THIS SHEET ARE RECOMMENDATIONS ONLY AND SUBJECT TO CHANGE PER THE INSTALLING CONTRACTOR AND/OR PER LOCAL MUNICIPAL CODE/REQUIREMENTS.

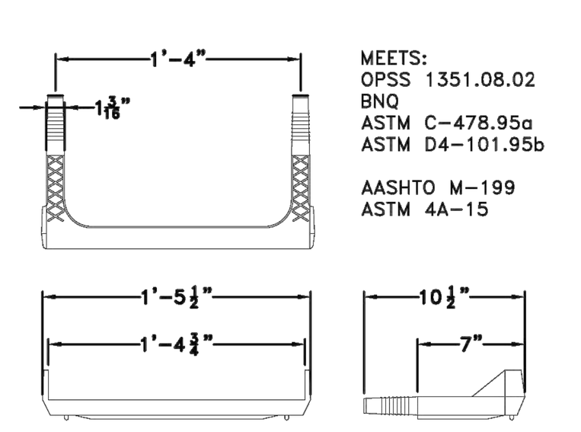




RISER/STAIR DETAIL



PIPE CONNECTION DETAIL



STEP DETAIL

*** NOTICE *** 03–25–2022

DUE TO CURRENT INCONSISTENCIES IN THE 16" STEP SUPPLY, STORMTRAP MAY SUBSTITUTE THE 16" STEP WITH THE CLOSEST ALTERNATIVE LENGTH STEP UNTIL THE SUPPLY CHAIN ISSUE IS RESOLVED.

StormTrap®

PATENTS LISTED AT: [HTTP://STORMTRAP.COM/PATENT]

1287 WINDHAM PARKWAY
ROMEOVILLE, IL 60446
P:815–941–4549 / F:331–318–5347

ENGINEER INFORMATION:
Manhard Consulting
700 SPRINGER RD
Lombard, IL
630–691–8500

PROJECT INFORMATION:
FERNWAY PARK
ELEMENTARY
POND A NW BASIN
ORLAND PARK, IL

CURRENT ISSUE DATE: 10/26/2023

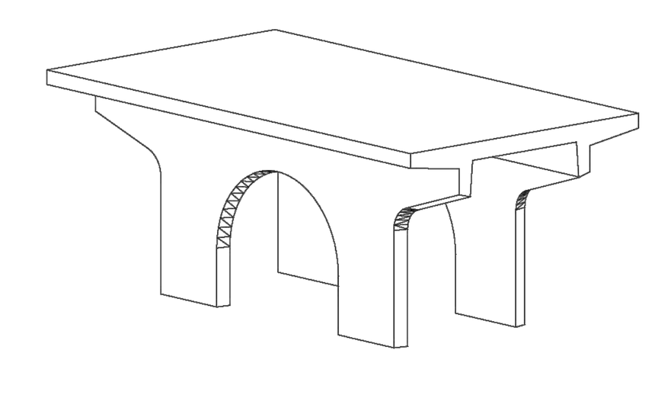
ISSUED FOR: PRELIMINARY

REV.	DATE:	ISSUED FOR:	DWN BY:
2	10/26/2023	PRELIMINARY	JPH
1	6/19/2023	PRELIMINARY	JH

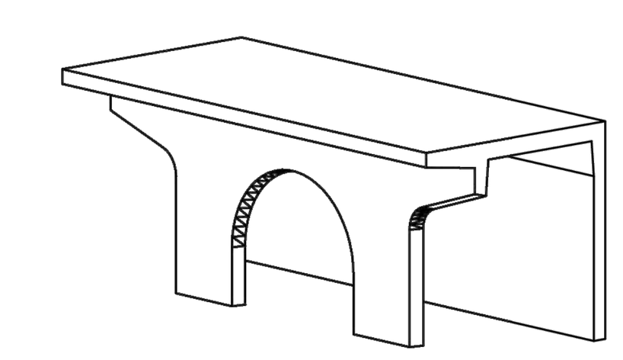
SCALE: NTS

SHEET TITLE: RECOMMENDED PIPE / ACCESS OPENING SPECIFICATIONS

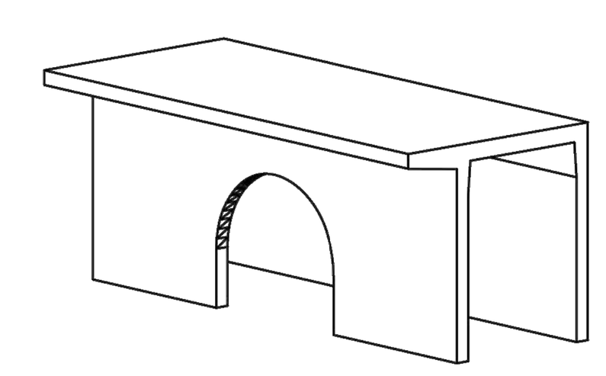
SHEET NUMBER: 5.0



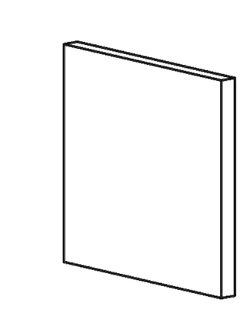
TYPE I



TYPE III



TYPE IV



TYPE IV
END PANEL

NOTES:
1. OPENING LOCATIONS AND SHAPES MAY VARY.
2. SP – INDICATES A MODULE WITH MODIFICATIONS.
3. P – INDICATES A MODULE WITH A PANEL ATTACHMENT.
4. POCKET WINDOW OPENINGS ARE OPTIONAL.

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REV.	DATE:	ISSUED FOR:	DWN BY:
2	10/26/2023	PRELIMINARY	JPH
1	6/19/2023	PRELIMINARY	JH

SCALE: NTS

SHEET TITLE: SINGLETRAP MODULE TYPES

SHEET NUMBER: 6.0

TRIA ARCHITECTURE

CIVIL/LANSCAPE CONSULTANT:
Manhard Consulting
One Overlook Point, Suite 290
Lincolnshire, IL 60069
(P) (847) 634-5550

STRUCTURAL CONSULTANT:
Larson Engineering, Inc.
1488 BOND STREET, SUITE 100
NAPERVILLE, ILLINOIS 60563-6503
ILLINOIS LICENSE NO 184-001442
LEI COMM. NO 21160576.000
(P) 630.351.0540
(F) 630.351.0164

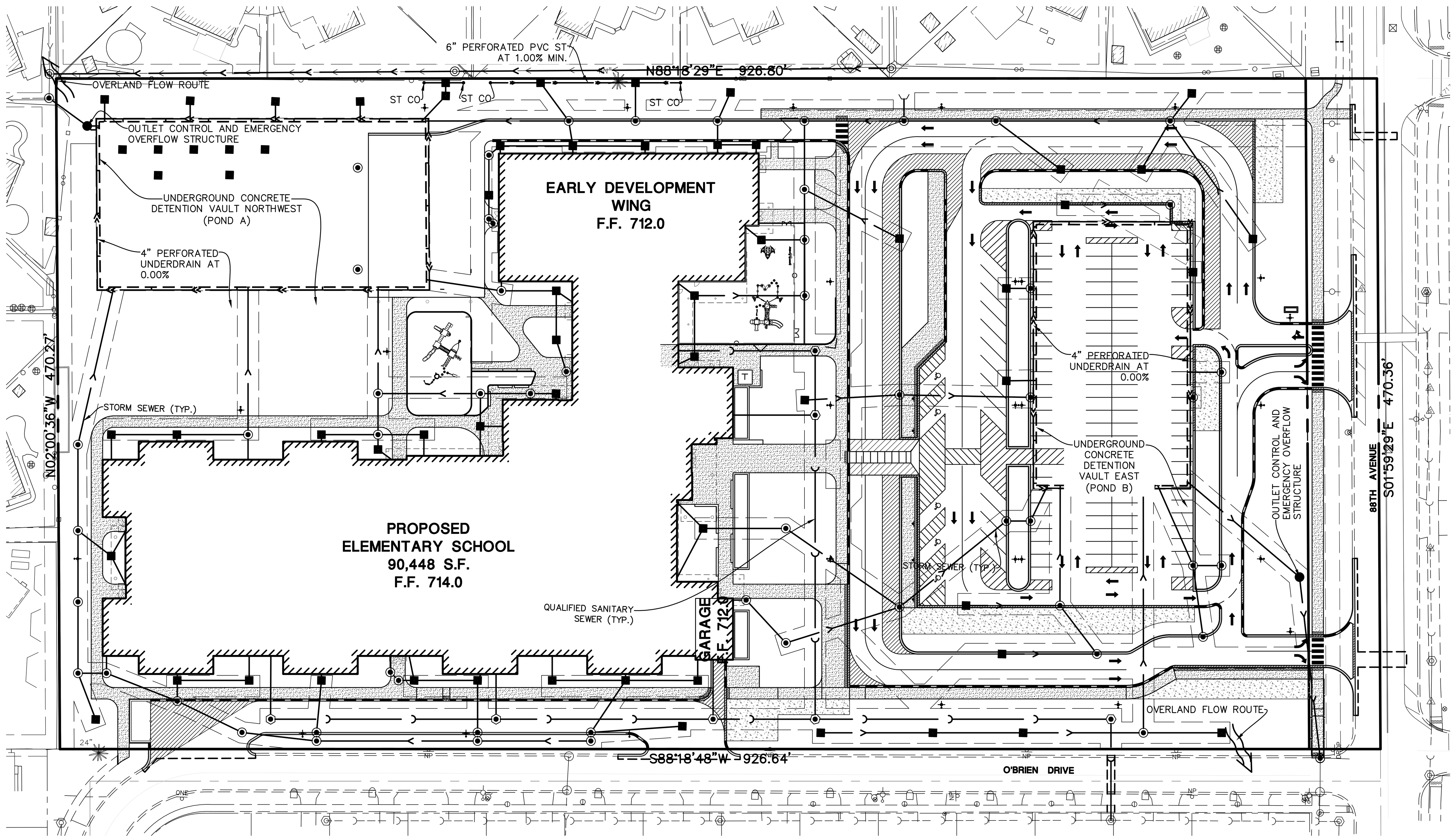
M.E.P./F.P. CONSULTANT:
O'Higgins & Arnold Sustainability, LLC
769 HEARTLAND DR., UNIT A SUGAR GROVE, ILLINOIS 60554

KIRBY SCHOOL DISTRICT 140
2023
NEW FERNWAY PARK ELEMENTARY SCHOOL
16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

PROJECT NUMBER: 21-054.1	REVISIONS:
PROJECT MANAGER: MG	1
DRAWN BY:	2
	3
ISSUED FOR BID:	4
10/30/2023	5

STORM TRAP DETAILS

C21.00



SCALE: 1"=50'

LEGEND

Symbol	Description
—>—>—	STORM SEWER
—)—)—	SANITARY SEWER
◉	STORM MANHOLE
■	STORM INLET
●	STORM CATCH BASIN

STORMWATER/FLOODPLAIN SUMMARY POND A

	REQUIRED	PROVIDED
	(AC–FT)	(AC–FT)
VOLUME CONTROL	0.308	0.399
DETENTION VOLUME	0.00	2.83

STORMWATER/FLOODPLAIN SUMMARY POND B

	REQUIRED	PROVIDED
	(AC–FT)	(AC–FT)
VOLUME CONTROL	0.208	0.215
DETENTION VOLUME	1.48	1.62

MAINTENANCE NOTES

1. MAINTENANCE REQUIREMENTS FOR PROPOSED DETENTION BASINS INCLUDE CHECKING AND CLEARING BASIN, OUTLET, AND BACKFLOW PREVENTER OF ANY OBSTRUCTIONS ANNUALLY OR AS NEEDED FOR SUFFICIENT OPERATION.
2. MAINTENANCE REQUIREMENTS FOR QUALIFIED SEWER PIPE AND STRUCTURES INCLUDE VISUAL INSPECTIONS AND REMOVAL OF ALL DEBRIS OR OBSTRUCTIONS ANNUALLY OR AS NEEDED FOR SUFFICIENT OPERATION.
3. ALL ON–SITE MAINTENANCE TO BE PERFORMED BY OWNER.

NOTES

1. PROPOSED IMPROVEMENTS TAKING PLACE OUTSIDE OF THE DEVELOPMENT AREA DEEMED TO BE MAINTENANCE ACTIVITIES. AREAS WILL BE RESTORED TO EXISTING CONDITIONS.

PROJECT SITE SUMMARY

PROPERTY ADDRESS: 16600 S. 88TH AVENUE, ORLAND PARK, ILLINOIS

PROPERTY INDEX NUMBER(S): 27–22–403–012–0000
27–22–403–011–0000

TOTAL CONTIGUOUS OWNERSHIP AREA: 10.00 ACRES

DEVELOPMENT AREA: 9.80 ACRES

MWRD MAINTENANCE NOTES

FERNWAY PARK ELEMENTARY SCHOOL SHALL ASSUME RESPONSIBILITY FOR THE FOLLOWING PERPETUAL MAINTENANCE ACTIVITIES:

1. GENERAL

REGULAR INSPECTIONS AND ROUTINE MAINTENANCE OF GENERAL AREAS SHALL BE PERFORMED ON A MONTHLY OR AS NEEDED BASIS. SPECIFIC ITEMS OF CONCERN INCLUDE:
- LITTER AND DEBRIS SHALL BE CONTROLLED
- LANDSCAPED AREAS SHALL BE MAINTAINED WITH REGULAR MOWING AND RESTORED WITH APPROPRIATE SEEDING/VEGETATION AS NECESSARY
- ACCUMULATED SEDIMENT SHALL BE REPAIRED WITH THE ADDITION OF NEW RIPRAP, AS NECESSARY, OF SIMILAR SIZE AND SHAPE
- ROADS SHALL BE SWEPT, VACUUMED AND/OR WASHED ON A REGULAR BASIS

2. STORMWATER MANAGEMENT FACILITIES

ALL COMPONENTS OF THE STORMWATER MANAGEMENT FACILITIES SHALL BE CHECKED MONTHLY BETWEEN MARCH AND NOVEMBER AND BE MAINTAINED AS NECESSARY TO ENSURE PROPER PERFORMANCE. IT IS CRITICAL THAT ALL INFLOWS AND OUTFLOWS TO THE DETENTION FACILITY ARE CLEAN AND PERFORMING AS DESIGNED. IN ADDITION, THE DESIGN VOLUME OF THE DETENTION FACILITY SHALL ALSO BE MAINTAINED. INSPECTIONS FOR THE FOLLOWING SPECIFIC ITEMS SHOULD BE CONDUCTED MONTHLY BETWEEN MARCH AND NOVEMBER:

SIDE SLOPES/EMBANKMENT/EMERGENCY OVERFLOW STRUCTURE
- INSPECT EMBANKMENTS FOR SETTLEMENT AND EROSION
- REMOVE WOODY GROWTH FROM THE EMBANKMENT
- ANY BREAKS, HIRE REGISTERED PROFESSIONAL ENGINEER FOR DESIGN RESOLUTION
- SEED AND SOD ANY ERODED AREAS
- SIGNS OF PIPING(LEAKAGE) OR SEEPAGE, REPAIR
- STABILIZE EMERGENCY OVERFLOW STRUCTURE IF EROSION OBSERVED
- REMOVE OBSTRUCTIONS BLOCKING EMERGENCY OVERFLOW SPILLWAY

VEGETATED AREAS
- REGULAR MOWING TO CONTROL VEGETATION, NO CUTTING OF NATIVE VEGETATION
- NEED FOR PLANTING, RESEEDING OR SODDING. SUPPLEMENT ALTERNATIVE NATIVE VEGETATION IF A SIGNIFICANT PORTION HAS NOT ESTABLISHED (50% OF THE SURFACE AREA). RESEED WITH ALTERNATIVE GRASS SPECIES IF ORIGINAL GRASS COVER HAS NOT SUCCESSFULLY ESTABLISHED.
- EVIDENCE OF GRAZING, MOTORBIKES OR OTHER VEHICLES, REPAIR
- CHECK FOR INVASIVE VEGETATION, REMOVE WHERE POSSIBLE.
- ALL VEGETATION MUST BE MAINTAINED PER THE APPROVED PLANTING PLAN.

OUTLET CONTROL STRUCTURE
- INSPECT RESTRICTOR AND REMOVE DEBRIS IF CLOGGED OR DISCHARGE REDUCED
- REMOVE ACCUMULATED SEDIMENT AT OUTLET
- SCOUR AND EROSION AT OUTLET, REPAIR AND RESEED
- ANY ICE DAMAGE TO OUTLET OF PIPE, REPAIR OF NECESSARY
- CONDITION OF TRASH TRACKS, REMOVE DEBRIS
- OUTLET CHANNEL CONDITIONS DOWNSTREAM

ACCESS FOR MAINTENANCE EQUIPMENT
- REMOVE ANY OBSTRUCTIONS PLACED IN MAINTENANCE EASEMENTS

SAFETY FEATURES
- ACCESS CONTROLS TO HAZARDOUS AREAS
- FENCES
- LOOSE OR DAMAGED POSTS
- LOOSE OR BROKEN WIRES
- CONDITION OF GATES
- SIGNS

DETENTION VOLUME
- INSPECT ALL STORMWATER DETENTION FACILITIES TO ENSURE THAT THE CONSTRUCTED VOLUME FOR DETENTION IS MAINTAINED. NO SEDIMENT, TOPSOIL, OR OTHER DUMPING INTO THE FACILITY SHALL BE ALLOWED. SPECIFIC LOCATIONS IN THE STORMWATER MANAGEMENT SYSTEM, DESIGNED TO ACCUMULATE SEDIMENT, SHALL BE DREDGED AS NECESSARY TO PREVENT SEDIMENT FROM REACHING THE INVERT OF ANY GRAVITY OUTLET PIPE.

3. VOLUME CONTROL FACILITY

ROUTINE INSPECTIONS AND MAINTENANCE OF VOLUME CONTROL FACILITIES SHALL BE PERFORMED BY THE OWNER ON A YEARLY OR AS NEEDED BASIS. SPECIFIC ITEMS OF CONCERN INCLUDE:
- FACILITY SHALL BE INSPECTED YEARLY USING THE MONITORING WELL TO VERIFY THE SYSTEM IS FUNCTIONING PROPERLY.

4. STORMWATER COLLECTION SYSTEM

THE OWNER SHALL PERFORM MONTHLY INSPECTIONS OF ALL COMPONENTS OF THE STORMWATER COLLECTION SYSTEM. THE MONTHLY INSPECTION SHALL OCCUR BETWEEN MARCH AND NOVEMBER AND INCLUDE THE FOLLOWING SPECIFIC AREAS OF CONCERN:

STORM INLETS/MANHOLES
- REMOVE ACCUMULATED LEAVES AND OTHER DEBRIS FROM GRATES
- RESET COVERS/LIDS ON AS–NEEDED BASIS
- REMOVE ACCUMULATED SEDIMENT FROM MANHOLE BOTTOM WHEN 50% OF SUMP IS FILLED

STORM SEWERS/CULVERTS
- VISUALLY INSPECT PIPES BY REMOVING MANHOLE LIDS, MAKE REPAIRS AS NECESSARY
- STORM SEWERS AND CULVERTS SHALL BE CHECKED FOR SILTATION DEPOSITS AT INLETS, OUTLETS, AND WITHIN THE CONDUIT, CLEAN OUT AS NECESSARY
- RESTORE RIPRAP AT OUTFALLS IF EROSION OBSERVED
- RESTORE RIPRAP AT OUTFALLS
- REPLANT AND RESEED ANY ERODED AREAS

OVERLAND FLOW ROUTES (DITCHES/SWALES)
- ANNUAL VISUAL INSPECTIONS SHALL BE PERFORMED THAT VERIFY THE DESIGN CAPACITY OF THE OVERLAND FLOW ROUTES IS MAINTAINED. THE SLOPE AND CORSS SECTIONAL AREA OF THE DITCH/SWALE SHALL BE VERIFIED DURING THIS INSPECTION.
- REMOVE ANY OBSTRUCTIONS THAT HAVE BEEN PLACED IN THE DRAINAGE PATH
- SEED AND SOD ANY ERODED AREAS
- RESTORE RIPRAP AS NECESSARY
- REGRADE TO PROVIDE POSITIVE DRAINAGE AS NECESSARY
- REGULAR MOWING TO CONTROL VEGETATION

5. VEGETATED AREAS
- NEED FOR PLANTING, RESEEDING, OR SODDING. SUPPLEMENT ALTERNATIVE NATIVE VEGETATION IF A SIGNIFICANT PORTION HAS NOT ESTABLISHED (50% OF THE SURFACE AREA AFTER SECOND GROWING SEASON). RESEED WITH ALTERNATIVE NATIVE GRASS SPECIES IF ORIGINAL GRASS COVER HAS NOT SUCCESSFULLY ESTABLISHED.
- EVIDENCE OF GRAZING, MOTORBIKES, OR OTHER VEHICLES, REPAIR.
- CHECK FOR INVASIVE VEGETATION, REMOVE WHEN POSSIBLE.
- REGULAR MOWING TO CONTROL VEGETATION; IT IS RECOMMENDED THAT NATIVE VEGETATION REMAIN UNCUT.
- DEAD OR DAMAGED NON–NATIVE GRASSY AREAS – REPAIR WITH SEEDING WITH FERTILIZATION OR SEEDING WITH MULCH.
- COMPENSATORY STORAGE AREA SHALL BE RESEEDED WITH APPROPRIATE VEGETATION ACCORDING TO THE APPROVED PLANTING PLAN.

6. QUALIFIED SEWER CONSTRUCTION
- PERFORM MANHOLE INSPECTIONS ONCE EVERY FIVE YEARS, MAKE REPAIRS AS NECESSARY.
- PERFORM SEWER INSPECTIONS ONCE EVERY FIVE YEARS, MAKE REPAIRS AS NECESSARY.
- PERFORM REGULAR CLEANING SO THAT EACH SEWER SEGMENT IS CLEANED ONCE EVERY 5 YEARS.
- REMOVE ANY OBSTRUCTIONS PLACED IN MAINTENANCE EASEMENTS THAT MAY IMPEDE MAINTENANCE EQUIPMENT AREAS.

TRIA ARCHITECTURE

KIRBY SCHOOL DISTRICT 140

2023

NEW FERNWAY PARK ELEMENTARY SCHOOL

16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

MWRD MAINTENANCE EXHIBIT - ALTERNATE #1

C21.00.1

06-01-16

MANHARD CONSULTING, LTD.
STANDARD SPECIFICATIONS

GENERAL CONDITIONS

CONTRACTOR acknowledges and agrees that the use and reliance of these Plans and Specifications is sufficient consideration for CONTRACTOR'S covenants stated herein.

DEFINITION OF TERMS

a. "CLIENT" shall mean TRIA ARCHITECTURE , which is the person or entity with whom Manhard Consulting, Ltd. has contracted with to prepare Civil Engineering PLANS and SPECIFICATIONS.

b. "ENGINEER" shall mean Manhard Consulting, Ltd., a Civil Engineering consultant on the subject project.

c. "PLANS and SPECIFICATIONS" shall mean the Civil Engineering PLANS and SPECIFICATIONS prepared by the ENGINEER, which may be a part of the contract documents for the subject project.

d. "CONTRACTOR" shall mean any person or entity performing any work described in the PLANS and SPECIFICATIONS.

e. "JURISDICTIONAL GOVERNMENTAL ENTITY" shall mean any municipal, county, state or federal unit of government from whom an approval, permit and/or review is required for any aspect of the subject project.

INTENT OF THE PLANS AND SPECIFICATIONS

The intent of the PLANS and SPECIFICATIONS is to set forth certain requirements of performance, type of equipment and structures, and standards of materials and construction. They may also identify labor and materials, equipment and transportation necessary for the proper execution of the work but are not intended to be infinitely determined so as to include minor items obviously required as part of the work. The PLANS and SPECIFICATIONS require new material and equipment unless otherwise indicated, and to require complete performance of the work in spite of omissions of specific references to any minor component part. It is not intended, however, that materials or work not covered by or properly inferred from any heading, branch, class or trade of the SPECIFICATIONS shall be supplied unless distinctly so noted. Materials or work described in words, which so applied have a well-known technical or trade meaning, shall be held to refer to such recognized standards.

INTERPRETATION OF PLANS AND SPECIFICATIONS

a. The CLIENT and/or CONTRACTOR shall promptly report any errors or ambiguities in the PLANS and SPECIFICATIONS to the ENGINEER. Questions as to meaning of PLANS and SPECIFICATIONS shall be interpreted by the ENGINEER, whose decision shall be final and binding on all parties concerned.

b. The ENGINEER will provide the CLIENT with such information as may be required to show revised or additional details of construction.

c. Should any discrepancies or conflicts on the PLANS or SPECIFICATIONS be discovered either prior to or after award of the contract, the ENGINEER's attention shall be called to the same before the work is begun thereon and the proper corrections made. Neither the CLIENT nor the CONTRACTOR may take advantage of any error or omissions in the PLANS and SPECIFICATIONS. The ENGINEER will provide information when errors or omissions are discovered.

GOVERNING BODIES

All works herein proposed shall be completed in accordance with all requirements of any JURISDICTIONAL GOVERNMENTAL ENTITY, and all such pertinent laws, directives, ordinances and the like shall be considered to be a part of these SPECIFICATIONS. If a discrepancy is noted between the PLANS and SPECIFICATIONS and requirements of any JURISDICTIONAL GOVERNMENTAL ENTITY, the CLIENT and/or the CONTRACTOR shall immediately notify the ENGINEER in writing.

LOCATION OF UNDERGROUND FACILITIES AND UTILITIES

When the PLANS and SPECIFICATIONS include information pertaining to the location of existing underground facilities and utilities (including but not limited to water mains, sanitary sewers, storm sewers, electric, telephone, gas and cable TV lines), such information represents only the opinion of the ENGINEER as to the approximate location and elevation of such facilities and utilities. At the locations wherein detailed positions of these facilities and utilities become necessary to the new construction, including all points of connection, the CONTRACTOR shall furnish all labor and tools to verify or definitely establish the horizontal location, elevation, size and material (if appropriate) of the facilities and utilities. The CONTRACTOR shall notify the ENGINEER at least 48 hours prior to construction if any discrepancies in existing utility information or conflicts with existing utilities exist. The ENGINEER assumes no responsibility whatever with respect to the sufficiency or accuracy of the information shown on the PLANS and SPECIFICATIONS relative to the location of underground facilities and utilities, nor the manner in which they are removed or adjusted.

It shall be the CONTRACTOR's responsibility prior to construction, to notify all Utility Companies of the intent to begin construction and to verify the actual location of all such facilities and utilities. The CONTRACTOR shall also obtain from the respective Utility Companies the working schedules for removing or adjusting these facilities.

UNSUITABLE SOILS

The PLANS have been prepared by the ENGINEER based on the assumption that all soils on the project are suitable to support the proposed improvements shown. The CLIENT or CONTRACTOR shall immediately notify the ENGINEER if he discovers or encounters an obstruction that prevents the installation of the improvement according to the line and grades shown on the PLANS.

PROTECTION OF TREES

All trees that are not to be removed shall be protected from damage. Trees shall not be removed unless requested to do so in writing by the CLIENT.

NOTIFICATION OF OWNERS OF FACILITIES AND UTILITIES

The CONTRACTOR shall notify all applicable Jurisdictional Governmental Entities or utility companies, i.e., water, sewer, electric, telephone, gas and cable TV prior to beginning any construction so that said entity or company can establish the location and elevation of underground pipes, conduits or cables adjoining or crossing proposed construction.

TRAFFIC CONTROL

The CONTRACTOR shall provide when required by any JURISDICTIONAL GOVERNMENTAL ENTITY, all signs, equipment, and personnel necessary to provide for safe and efficient traffic flow in all areas where the work will interrupt, interfere or cause to change in any form, the conditions of traffic flow that existed prior to the commencement of any portions of the work. The CLIENT may, at his discretion, require the CONTRACTOR to furnish traffic control under these or other circumstances where in his opinion it is necessary for the protection of life and property. Emergency vehicle access shall be maintained at all times. Unless authorized by the CLIENT or CLIENT's construction representative, all existing access points shall be maintained at all times by the CONTRACTOR. The need for traffic control shall be anticipated by the CLIENT.

WORK AREA

The CONTRACTOR, his agents and employees and their employees and all equipment, machinery and vehicles shall confine their work within the boundaries of the project or work area specified by the Client. The CONTRACTOR shall be solely liable for damage caused by him or his agents and employees and their equipment, machinery and vehicles on adjacent property or areas outside designated work areas.

UTILITY POLES

It shall be the responsibility of the CONTRACTOR to arrange for the relocation or bracing of existing utility poles that may be within the working limits of this contract. It is expressly understood that all work and costs connected with the maintenance of these utility poles, their temporary relocations, etc., shall be the responsibility of the CLIENT or the CONTRACTOR.

RESTORATION

It is the intent of these SPECIFICATIONS that clean-up and final restoration shall be performed immediately upon completion of each phase of the work, both inside and outside the Project, or when so directed by the CLIENT so that these areas will be restored as nearly as possible to their original condition or better, and shall include but not be limited to, restoration of maintained lawns and rights-of-way, roadways, driveways, sidewalks, ditches, bushes, hedges, trees, shrubs, fences, mailboxes, sewers, drain tiles, water mains, etc.

CLEANING UP

The CONTRACTOR shall at all times keep the premises free from accumulations of waste material or rubbish caused by his employees or work, and at the completion of the work he shall remove all his rubbish, tools, scaffolding and surplus materials and shall leave his work "broom clean" or its equivalent, unless more exactly specified.

ROAD CLEANING

The CONTRACTOR shall maintain roadways adjoining the project site free from mud and debris at all times. If mud and/or debris is carried onto the roadways from vehicles entering onto the highway from either the CONTRACTOR's trucks, his employees' vehicles, or his material suppliers, the CONTRACTOR shall immediately remove said mud and/or debris.

SAFETY AND PROTECTION

The CONTRACTOR shall be solely and completely responsible for the conditions of the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. The CONTRACTOR shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR's duties and responsibilities for safety and for protection of the work shall continue until such time as all work is completed and the CLIENT has notified CONTRACTOR that the work is acceptable. The duties of the ENGINEER do not include review of the adequacy of either the CONTRACTOR's or the general public's safety in, on, or near the construction site.

HOLD HARMLESS

To the fullest extent permitted by law, any CONTRACTOR; material supplier or other entity by use of these plans and specifications hereby waives any right of contribution and agrees to indemnify, defend, save and hold harmless the CLIENT and ENGINEER and its agents, employees and consultants from and against all manner of claims, causes, causes of action, damages, losses and expenses, including but not limited to, attorneys' fees arising out of, resulting from or in connection with the performance of any work, pursuant to or with respect to these plans and specifications. However, this indemnity shall not be construed to indemnify ENGINEER, its consultants, agents or employees against its own negligence.

Claims, damages, losses and expenses as these words are used in the Agreement shall mean and include, but not be limited to (1) injury or damage occurring by reason of the failure of or use or misuse of any hoist, riggings, blocking, scaffolding or any and all other kinds of items of equipment, whether or not the same be owned, furnished or loaned by any part or entity, including any contractor; (2) all attorneys' fees and costs incurred in bringing an action to enforce the provisions of this indemnity; (3) costs for time expended by the indemnified party and its employees, at its usual rates plus costs or travel, long distance telephone and reproduction of documents and (4) consequential damages.

In any and all claims against the CLIENT or ENGINEER or any of their agents or employees and consultants by any party, including any employee of the CONTRACTOR or any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount of type of damages, compensation or benefits payable by or for the CONTRACTOR or any Subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts or any insurance maintained by CONTRACTOR or any Subcontractor or any other party.

INSURANCE

Any party using or relying on these plans, including any contractor, material supplier, or other entity shall obtain, (prior to commencing any work) general public liability insurance insuring against all damages and claims for any bodily injuries, death or property damage arising out of any work, including the construction work provided for in these plans, and shall name the CLIENT and ENGINEER and its consultants, agents and representatives as additional insureds under such insurance policy; provided that any party using or relying on these plans having obligations to maintain specific insurance by reason of any agreement with CLIENT or any CONTRACTOR or ENGINEER shall provide evidence and certificates of insurance as required by such contract or agreement. Such insurance must contain a clause stating that the insurance is primary coverage for ENGINEER and ENGINEER's other applicable coverage is considered secondary. Such insurance shall not limit any liability of any party providing work or services or providing materials.

THIRD PARTY BENEFICIARY

Manhard Consulting, Ltd., the ENGINEER, is intended to be a third party beneficiary of this willing agreement and requirement.

Note: These Specifications are for Northern Illinois.

DETAILED SPECIFICATIONS

I. DEMOLITION

The CONTRACTOR shall coordinate with respective utility companies prior to the removal and/or relocation of utilities. The CONTRACTOR shall coordinate with the utility company concerning portions of work which may be performed by the Utility Company's forces and any fees which are to be paid to the utility company for their services. The CONTRACTOR is responsible for paying for all fees and charges.

Should removal and/or relocation activities damage features indicated to remain, the CONTRACTOR shall provide new materials/structures in accordance with the contract documents. Except for materials designed to be relocated on this plan, all other construction materials shall be new.

Prior to demolition occurring, all erosion control devices are to be installed.

All existing utility lines and conduits located under proposed buildings shall be removed and properly backfilled. All utility lines and conduits located under drives, on-site roads, parking lots or sidewalks shall be filled with a flowable backfill and end plugged. All existing structures shall be removed. All existing utility lines located under landscape areas shall be left in place and plugged at all structures.

The CONTRACTOR is responsible for demolition, removal and disposal (in a location approved by all JURISDICTIONAL GOVERNING ENTITIES) of all structures, pads, walls, flumes, foundations, road, parking lots, drives, drainage structures, utilities, etc., such that the improvements shown on these plans can be constructed. All demolition work shall be in accordance with all applicable federal, state and local requirements. All facilities to be removed shall be undercut to suitable material and brought to grade with suitable compacted fill material per the specifications.

The CONTRACTOR is responsible for obtaining all permits required for demolition and disposal.

Electrical, telephone, cable, water, fiber optic cable and/or gas lines needing to be removed shall be coordinated by the CONTRACTOR with the affected utility company.

CONTRACTOR must protect the public at all times with fencing, barricades, enclosures, and other appropriate best management practices.

Continuous access shall be maintained for surrounding properties at all times during demolition.

All fire access lanes within the project area shall remain in service, clean of debris, and accessible for use by emergency vehicles.

The CONTRACTOR shall coordinate water main work with the Fire Department and the JURISDICTIONAL GOVERNING ENTITY to plan the proposed improvements and to ensure adequate fire protection is available to the facility and site throughout this specific work and through all phases of construction. CONTRACTOR shall be responsible for any required water main shut offs with the JURISDICTIONAL GOVERNING ENTITY during construction. Any costs associated with water main shut offs will be the responsibility of the CONTRACTOR and no extra compensation will be provided.

CONTRACTOR shall maintain all existing parking areas, sidewalks, drives, etc. clear and free from any construction activity and/or material to ensure easy and safe pedestrian and vehicular traffic to and from the site. CONTRACTOR shall coordinate/phase all construction activity within proximity of the building and utility interruptions with the facility manager to minimize disturbance and inconvenience to facility operations.

CONTRACTOR may limit saw-cut and pavement removal to only those areas where it is required as shown on these construction plans, however if any damage is incurred on any of the surrounding pavement, etc. the CONTRACTOR shall be responsible for ITS removal and repair.

Any existing wells encountered shall be exposed and sealed 3' below proposed finish grade by the CONTRACTOR in accordance with Section 920.120 (latest edition) of the Illinois Water Well Construction Code, Department of Public Health, and all applicable local rules and regulations. CONTRACTOR is responsible for obtaining all permits required by JURISDICTIONAL GOVERNMENTAL ENTITIES for abandoning existing wells.

Any existing septic tanks and grease traps encountered shall have all liquids and solids removed and disposed of by a licensed commercial hauler in accordance with JURISDICTIONAL GOVERNING ENTITY regulations, and the tank and grease traps shall then be filled with suitable materials or removed from the site and disposed of by the CONTRACTOR.

Voids left by any item removed under any proposed building, pavement, walk, etc. or within 24" thereof shall be filled and compacted with suitable materials by the CONTRACTOR.

The CONTRACTOR shall be responsible for the disconnection of utility services to the existing buildings prior to demolition of the buildings.

Any material containing asbestos found within existing structures shall be removed from the site and disposed of off-site by the CONTRACTOR in accordance with County, State and Federal regulations.

CONTRACTOR shall develop and implement a daily program of dust control and shall submit and obtain JURISDICTIONAL GOVERNING ENTITY approval of dust control procedures prior to demolition of any structures. Modification of dust control procedures shall be performed by the CONTRACTOR to the satisfaction of the JURISDICTIONAL GOVERNING ENTITY as requested.

The CONTRACTOR shall coordinate all demolition with the JURISDICTIONAL GOVERNING ENTITY and CLIENT to ensure protection and maintenance of sanitary sewer and water utilities as necessary and to provide stormwater conveyance until new facilities are constructed, tested and placed into operation.

The locations of all existing utilities shown on this plan have been determined from the best information available and are given for the convenience of the CONTRACTOR and are not to be interpreted as the exact location, or as the only obstacles that may occur on the site. The ENGINEER assumes no responsibility for their accuracy. Prior to the start of any demolition activity, the CONTRACTOR shall notify the utility companies for location of existing utilities and shall verify existing conditions and proceed with caution around any anticipated features.

The CONTRACTOR is responsible for removing the existing irrigation system in the areas of proposed improvements. The contractor shall cap the existing irrigation system to remain such that the remaining system shall continue to function properly.

The parking lot shall be completed in sections such that it does not interrupt the facility operations. The CONTRACTOR shall coordinate with the construction manager for work to be performed.

II.EARTHWORK

STANDARDS

This work shall be completed in conformance with the applicable sections of the Standard Specifications for Road and Bridge Construction, Department of Transportation, State of Illinois, latest edition except as modified below.

SOIL BORING DATA

Copies of results of soil boring and reports, if such borings were taken by the CLIENT in the vicinity of the proposed construction site, should be made available by the CLIENT to the CONTRACTOR. These borings are presented for whatever purpose the CONTRACTOR chooses to make of them. The ENGINEER makes no representation or warranty regarding the number, location, spacing or depth of borings taken, nor of the accuracy or reliability of the information given in the results thereof.

Further, the ENGINEER does not assume responsibility for the possibility that during construction, the soil and groundwater condition may be different than indicated. Neither does the ENGINEER assume responsibility for variations of soil and groundwater at location between borings. The CONTRACTOR is required to make its own borings, explorations and observations to determine soil and groundwater conditions.

EARTHWORK CALCULATIONS AND CROSS SECTIONS

The CONTRACTOR understands that any earthwork calculations, quantities or cross sections that have been furnished by the ENGINEER are for information only and are provided without any guarantee by the CLIENT or ENGINEER whatsoever as to their sufficiency or accuracy. CONTRACTOR warrants that he has performed his own subsurface investigations as necessary and his own calculations and cross sections to determine site soil conditions and earthwork volumes. The ENGINEER makes no representation or guarantee regarding earthwork quantities or that the earthwork for this project will balance due to the varying field conditions, changing soil types, allowable construction to tolerances and construction methods that are beyond the control of the ENGINEER.

CLEARING, GRUBBING AND TREE REMOVAL

The site shall be cleared, grubbed, and trees and stumps removed where designated on the PLANS. Trees designated to remain shall be protected from damage.

TOPSOIL STRIPPING

Upon completion of demolition, clearing, grubbing and tree removal, all topsoil shall be stripped from under all buildings and pavements areas, and other areas necessary to complete the work. Topsoil stripped shall be placed in stockpiles in locations as designated by the CLIENT.

TOPSOIL RESPREAD

Upon completion of roadway and/or parking lot improvements and installation of underground utilities a minimum of six inches (6") of topsoil shall be respread over all unpaved areas which have been disturbed by earthwork construction, except building pads and other designated areas, which shall be kept free from topsoil.

SEEDING

Upon completion of topsoil respread, the CONTRACTOR shall apply seed and fertilizer to all respread areas in accordance with IDOT standards or as designated on landscape drawings and specifications provided by the CLIENT.

SODDING

Upon completion of topsoil respread, the CONTRACTOR shall install sod to all areas designated on the plans or as designated on the landscape drawings and specifications provided by the CLIENT.

EXCAVATION AND EMBANKMENT

Upon completion of topsoil stripping, all excavation and embankments shall be completed as shown on the PLANS. All suitable excavated materials shall be hauled, placed (moisture conditioned if necessary) and compacted in the embankment areas. The CONTRACTOR shall include all dewatering, temporary ditching and culverts necessary to complete the excavation and embankment.

Specifically included in the scope of Excavation and Embankments is grading and shaping of all cut or fill areas including swales and ditches; handling of sewer spoil, etc., and all work required to provide positive drainage at the end of each working day and upon completion of a section.

The CONTRACTOR shall be responsible for the excavation of all swales and ditches and for the excavation or filling of the roads, building pads and parking lots within the work limits to lines & grades shown on the plans. He shall be responsible for obtaining compaction in accordance with the minimum values listed in the table below for all embankments unless more stringent values are listed in the soils report or are approved by the CLIENT, and to use any method approved by the CLIENT necessary to obtain this compaction (i.e., soil fabric or any undercutting that may be required).

Type Material	Percent Compaction Standard	Pavement & Floor Slabs	Grass Areas
Sandy Soils	Modified Proctor	95%	90%
Clayey Soils	Standard Proctor	95%	90%

The CONTRACTOR shall notify the CLIENT if proper compaction cannot be obtained so that the CLIENT may determine what remedial measures may be needed.

A soils testing firm employed by the CLIENT shall determine which soils are unsuitable. Materials in their natural state being defined as unsuitable that would be suitable material if moisture conditioned, shall be conditioned by the CONTRACTOR and used as suitable embankment material or hauled from the site.

For purposes of definition, unsuitable material shall be as follows unless determined otherwise by the Soils Engineer:

1. Any soil whose optimum moisture content exceeds 25%.
2. Any cohesive soil with an unconfined compressive strength of 1.5 tons per square foot or less.
3. Any soil whose silt content exceeds 60% by weight.
4. Any soil whose maximum density is less than 100 pounds per cubic foot.
5. Any soil containing organic, deleterious, or hazardous material.

Upon completion of excavation and shaping of the water retention areas intended to maintain a permanent pool of water, all silt seams and granular or sandy soils shall be removed to a minimum depth of three feet below the subgrade and replaced with an impermeable clay liner, including adjacent to and under storm sewer inlets and outlets. It is the intent of these PLANS and SPECIFICATIONS that the CONTRACTOR shall prepare the lake bottoms, side slopes, and compaction thereof such that the lakes will maintain the proposed normal water level and that leakage does not exceed ½ inch per week.

Ditches and swales are to be excavated to the lines and grades indicated on the PLANS. All suitable materials excavated from the ditches shall be used in construction of the embankments.

The CONTRACTOR shall notify the CLIENT immediately upon encountering groundwater during excavation. If in the opinion of the CLIENT or the JURISDICTIONAL GOVERNING ENTITY this condition necessitates the installation of perforated drain tile bedded in washed gravel or open storm sewer joints wrapped with fabric, the CONTRACTOR shall install the same.

During excavation and embankment, grades may be adjusted to achieve an overall site earthwork balance. The CONTRACTOR shall cooperate fully with the CLIENT in adjustment of grades, construction methods and placement of material to meet the above goals and shall immediately advise CLIENT if he believes that the earthwork will not balance.

It is the intent of these PLANS that storm waters falling on the site be diverted into sedimentation / lake / detention basins during construction. The CONTRACTOR shall construct and maintain any temporary ditches or swales that are necessary to accomplish this prior to beginning mass excavation.

EROSION CONTROL

Suitable erosion control practices shall be maintained by the CONTRACTOR in accordance with Illinois Urban Manual and all applicable Soil Erosion and Sedimentation Control ordinances and the PLANS.

UNDERCUTTING DURING EARTHWORK

If the subgrade cannot be dried adequately by discing as outlined above for placement of material to planned grades and if the CLIENT determines that the subgrade does not meet the standards set forth above, the CLIENT may require undercutting.

MISCELLANEOUS CONTRACT ITEMS

The following items may be required at the CLIENT's option, as indicated on the PLANS or as required by the JURISDICTIONAL GOVERNING ENTITY:

(1) **GEOTEXTILE FABRIC**

Geotextile fabric or approved equal shall be provided in areas as designated by the CLIENT, as indicated on the PLANS or as required by the JURISDICTIONAL GOVERNING ENTITY where proper compaction of embankments over existing soft soils is not possible. Geotextile fabric shall meet the material specifications of and shall be installed in accordance with the above standards.

(2) **EROSION CONTROL BLANKET**

Erosion control blanket or approved equal shall be provided in areas as designated by the CLIENT, as indicated on the PLANS or as required by the JURISDICTIONAL GOVERNING ENTITY for the stabilization of disturbed areas. Erosion control blanket shall meet the material specifications of and shall be installed in accordance with the above standards, the Illinois Urban Manual and/or the details shown on the PLANS.

III.UNDERGROUND IMPROVEMENTS

A. GENERAL

STANDARDS

All underground improvements shall be constructed and tested in accordance with the Standard Specifications for Water and Sewer Construction in Illinois and Standard Specifications for Road and Bridge Construction, Department of Transportation, State of Illinois, latest edition. In the event of conflicting guidelines, the more restrictive shall govern.

SELECTED GRANULAR BACKFILL

Selected Granular Backfill shall be required for all sewer and water main trenches lying under existing or proposed streets, driveways, parking lots and within 24" thereof, and where noted on PLANS. All material placed in such trenches shall be in accordance with the above standards.

MANHOLES, CATCH BASIN, INLETS & VALVE VAULTS

All Manholes, Catch Basins, Inlets, and Valve Vaults shall be constructed of reinforced precast concrete ring construction with tongue and groove joints in conformance with the latest revision of ASTM designation C-478. All joints between sections and frames (except sanitary manholes, see Section IIIB Manholes, below) shall be sealed with mastic type bituminous jointing compound. CONTRACTOR shall remove all excess mastic on inside of structure and butter joints with mortar. Manholes are to have offset cones except that no cone shall be used on storm manholes 6'-0" deep or less in which case a reinforced concrete flat top section shall be used, and Valve Vaults shall have concentric cones. Only concrete adjustment rings will be permitted where necessary and shall be limited to two adjustment rings totaling not more than 8" in height. All manholes and catch basin steps shall be copolymer polypropylene with continuous ½" steel reinforcement as manufactured by MA Industries, or approved equal.

AUGER/BORING AND CASING

Casing pipe shall be welded steel pipe, installed where shown on the PLANS. The carrier pipe shall be securely blocked and banded and sanitary and storm sewers shall maintain the specified gradient. Upon installing the carrier pipe the ends shall be sealed with hydraulic cement.

AUGER (OPEN BORE)

The CONTRACTOR shall auger (open bore) where noted on PLANS.

HORIZONTAL AND VERTICAL SEPARATION OF WATER AND SEWER MAINS

Horizontal and vertical separation of water and sewer mains shall be in accordance with Standard Specifications for Water and Sewer Construction in Illinois Section 41-2.01A and 41-2.01B and Standard Drawing 18, 19, 20, 21, 22, 23 and 24.

STRUCTURE ADJUSTMENTS

Structures shall be adjusted to the finished grade as shown on PLANS.

B. SANITARY SEWERS AND APPURTENANCES

SANITARY SEWER PIPE

Sanitary sewer pipe including building services, shall conform to the following:

(1) Polyvinyl Chloride (PVC) Sewer Pipe shall conform to ASTM D3034 (4-inch thru 15-inch) or ASTM F679 (18-inch thru 48-inch) minimum SDR 26 with flexible elastomeric seal gasket gasketed joints conforming to ASTM D3212 and F477.

(2) Ductile Iron Sewer Pipe shall conform with ANSI/AWWA C151/A21.51 Class 50, cement lined with push on type joints conforming to ANSI/AWWA C111/A21.11.

Sanitary sewers shall include bedding and backfilling.

MANHOLES

Manholes shall be constructed in conformance with Section IIIA Manholes, etc. above. The concrete base and bottom section shall be constructed of precast reinforced concrete monolithically cast sections including benches, pipe connection and invert flow lines. Manhole frame and lids shall be Neenah R-1772 or approved equal, with lids imprinted "SANITARY", with recessed pick holes. Manhole joints between adjustment rings and frames and between manhole sections shall be set on preformed plastic gasket consisting of a homogeneous blend of refined hydrocarbon resins and plasticizing compounds reinforced with inert mineral filler to provide a water tight seal. All pipe connection openings shall be precast with resilient rubber watertight pipe sleeves. A 10" elastomeric band (chimney seal) shall be installed extending from the manhole top to the manhole frame as shown on detail. Manholes shall include steps, frame & grate, bedding, and trench backfill.

FOUNDATION, BEDDING AND HAUNCHING

Foundation, Bedding and Haunching shall be wet coarse aggregate or moist fine aggregate in accordance with the above standards and placed as shown on the detail.

TESTING

Sanitary sewers shall be air tested and tested for deflection in accordance with the requirements of Section 31-1.12 "TESTING AND INSPECTION FOR ACCEPTANCE OF SANITARY SEWERS" of the Standard Specifications for Water and Sewer Construction in Illinois or the JURISDICTIONAL GOVERNING ENTITY, whichever is more restrictive. In addition, a televised inspection of the completed sanitary sewers shall be conducted and a copy of the videotape and report furnished to the JURISDICTIONAL GOVERNING ENTITY.

All sanitary manholes are to be tested for water tightness in accordance with ASTM C969 "Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines", or ASTM C1244 "Standard Test Method for Concrete Sewer Manholes by the Negative Pressure (Vacuum) Test".

SERVICES

A wye branch or "tee" and sanitary service line, properly plugged and sealed shall be constructed as shown on the PLANS. The ends of all services shall be marked with a 4"x4" post extending 36" above grade and painted red. The CONTRACTOR shall keep accurate records of all Wye or Tee locations as measured from the downstream manhole as well as the service lengths and furnish same to CLIENT.

RISERS

Risers shall be constructed in locations as shown on the PLANS and according to the detail.

DROP MANHOLE CONNECTIONS

Drop manhole connections to existing manholes shall be constructed according to the PLANS and the detail.

***SANITARY SEWER FORCE MAIN**- INTENTIONALLY OMITTED*

TELEVISION INSPECTION

Upon completion of construction a television inspection of the sanitary sewer system shall be performed on all portions of the sewer if required by the JURISDICTIONAL GOVERNING ENTITY. Videotapes and written report of all television inspections shall be provided to the CLIENT. The form of report and type and format of the videotape shall be approved by the JURISDICTIONAL GOVERNING ENTITY.

All sewers and appurtenances shall be cleaned prior to inspection and testing required by this section.

All defects and corrective work required as the result of television inspection shall be performed by the CONTRACTOR without delay. All dips, cracks, leaks, improperly sealed joints and departures from approved grades and alignment shall be repaired by removing and replacing the involved sections of pipe. Upon completion thereof, the sewer shall be retested and such further inspection made as may appear warranted by the CLIENT.

MISCELLANEOUS

All floor drains shall be connected to the sanitary sewer.

C. WATER MAINS AND APPURTENANCES

WATER MAIN PIPE (3" AND LARGER)

Water main pipe shall conform to the following:

(1) Ductile iron pipe shall be per ANSI/AWWA C151/A21.51, Thickness Class 52, minimum 150 psi working pressure, cement lined in accordance with ANSI/AWWA C104/A21.4, with "push on" type joints.(2)

(2) Polyvinyl Chloride Pipe (PVC) conforming to the latest revision of ANSI/AWWA C900 (4-inch thru 12-inch) or ANSI/AWWA C905 (14-inch thru 48-inch) with a pressure rating of 235 psi, SDR 18 in accordance with ASTM D2241. Joints shall be pressure rated in accordance with ASTM D3139 with elastomeric seals in accordance with ASTM F477.

Installation shall be in accordance with ANSI/AWWA C600 (Ductile Iron) or ANSI/AWWA C605 (PVC). All water main shall have mechanical joint cast iron or ductile iron fittings in accordance with ANSI/AWWA C110/A21.10 or compact ductile iron fittings in accordance with ANSI/AWWA C153/A21.53 with 250 psi working pressure.

Poured or monolithic concrete thrust blocks are required to brace all tees, plugs, caps, and bends of 11 1/4 degree deflection or greater. Minimum cover for all water mains, including services, shall be 5'-6" from the finished grade. Water main shall include bedding and backfilling.

WATER VALVES

All valves shall be resilient wedge gate valves conforming to the latest revision of ANSI/AWWA C515, with a rated working pressure of 200 psi in accordance with JURISDICTIONAL GOVERNING ENTITY requirements, except that butterfly valves conforming to ANSI/AWWA C504 shall be constructed on all water mains 16" diameter and larger. Valves shall be non-rising stem and shall close by turning clockwise.

VALVE VAULTS

Valve vaults shall be constructed in conformance with Section IIIA Manholes, etc. above. Frame and lids shall be as approved by the JURISDICTIONAL GOVERNING ENTITY and shall be imprinted "WATER".

VALVE BOXES

Valve boxes shall be constructed in conformance with the standard detail. Valve boxes shall be cast iron extension screw type having lids imprinted with the letters "WATER".

FIRE HYDRANTS

Fire Hydrants shall be per JURISDICTIONAL GOVERNING ENTITY requirements. All fire hydrants shall be located as shown on the PLANS and shall be painted in a manner acceptable to the JURISDICTIONAL GOVERNING ENTITY after installation and shall be adjusted to final grade.

TAP, STOPS AND BOX

The CONTRACTOR shall determine from the JURISDICTIONAL GOVERNING ENTITY as to the exact style, type, and manufacture of corporation stops, ground key stops and services boxes preferred by the JURISDICTIONAL GOVERNING ENTITY and shall furnish same.

***SMALL WATER SERVICES (2" DIAMETER OR LESS)**- INTENTIONALLY OMITTED*

DISINFECTION

Disinfections shall meet all of the requirements of the State of Illinois, Environmental Protection Agency, Public Water Supplies Division. The safe quality of the water supply shall be demonstrated by bacteriological analysis of samples collected at sampling taps on at least two consecutive days following disinfection of the mains and copies of the said report submitted to the JURISDICTIONAL GOVERNING ENTITY and the CLIENT.

PRESSURE TEST

Allowable leakage, test pressure and duration shall be as per the requirements of the JURISDICTIONAL GOVERNING ENTITY.

PRESSURE CONNECTION TO EXISTING WATER MAIN - INTENTIONALLY OMITTED

DRY CONNECTION TO EXISTING WATER MAIN

A dry connection to existing water main shall include a connection to an existing water main stub where shown on the PLANS. The CONTRACTOR shall obtain approval of the JURISDICTIONAL GOVERNING ENTITY to shut down any main, including submittal of a schedule of the time of shut off and the time the line will be returned to service. All mains shut down that are opened to atmosphere must be disinfected prior to returning main into service.

POLYETHYLENE ENCASEMENT (FOR DUCTILE IRON WATER MAIN ONLY)

The CLIENT, or JURISDICTIONAL GOVERNING ENTITY may request that portions of the water main be enclosed in a polyethylene encasement in accordance with ANSI/AWWA C105/A21.5 should soil conditions so warrant its use.

FOUNDATION, BEDDING AND HAUNCHING

Foundation, Bedding and Haunching shall be wet coarse aggregate or moist fine aggregate in accordance with the above standards and placed as shown on the detail.

TRACER WIRE

If the distance between valves when installing PVC pipe exceeds 1,000', tracer wire stations will be required for current induction. Tracer wire stations in grass areas will be Rhino TriView Flex Tracing Wire Stations or approved equal. In paved areas, they will be Valvco Tracer Wire Access Box for H2O loading or approved equal.

For open cut construction, using PVC pipe, a continuous, insulated, 12 gauge copper wire suitable for direct burial shall be taped on top of all piping to provide for locating following construction. This wire shall be securely terminated inside every valve vault on stainless steel hardware with an exposed lead of at least 12". A mechanically secure and soldered connection shall be provided for all wire splices. Where construction is by directional drilling or similar trenchless technology the tracer wire shall be 3/16" 7x19 PVC coated stainless steel aircraft cable with minimum breaking strength of 3,700 lbs (Lexco, Chicago, IL). Or Trace-Safe water blocking tracerwire RT series 19 gauge conductor (RT 1802W water, RT 1803W sewer).

Before final approval of any water main, there will be a monitored tracer wire continuity test in order to confirm proper installation of any tracer wire.

D. STORM SEWERS AND APPURTENANCES

STORM SEWER PIPE

Storm sewer pipe shall conform to the following:

(1) Reinforced concrete pipe minimum Class IV in conformance with the latest revision of ASTM designation C76 with C443 flexible gasket joints, except that bituminous mastic joints may be used in grass areas.

(2) Polyvinyl Chloride (PVC) Pipe: ASTM D3034 (4-inch thru 15-inch) or ASTM F679 (18-inch thru 36-inch), rated SDR 35, continually marked with manufacturer's name, pipe size, cell classification, SDR rating. Joints shall be flexible elastomeric seals conforming to ASTM D3212.

(3) Ductile Iron Pipe (DIP) shall conform to ANSI/AWWA C151/21.5, Class 50 cement lined with push on type joints conforming to ANSI/AWWA C111/A21.11.

Precast tees, bends, and manholes may be used if permitted by the JURISDICTIONAL GOVERNMENTAL ENTITY.

Storm sewer shall include bedding and trench backfill.

MANHOLES, INLETS & CATCH BASINS

Manholes, Inlets and Catch Basins shall be constructed in conformance with Section IIIA Manholes, etc. above. The space between connecting pipes and the wall of the manhole shall be completely filled with non-shrink hydraulic cement mortar. Frames and lids shall be Neenah or approved equal unless specified otherwise on the PLANS. All frames and grates shall be provided such that the flange fully covers the opening plus 2" of the structure as a minimum. * Provide **"Vane"** Type frame & grate for all structures located in curb where gradient exceed 2.0%. Manholes shall include steps, frame & grate, bedding and trench backfill.

FLARED END SECTION - INTENTIONALLY OMITTED

RIP RAP - INTENTIONALLY OMITTED

FOUNDATION, BEDDING AND HAUNCHING

Foundation, Bedding and Haunching shall be wet coarse aggregate or moist fine aggregate in accordance with the above standards and placed as shown on the detail.

UNDERDRAINS

Pipe underdrains shall be corrugated flexible plastic pipe conforming to AASHTO Designation M252 perforated corrugated polyethylene pipe (PE) with a smooth interior of the diameter indicated on the PLANS and wrapped in a soil filter fabric supplied and installed by the CONTRACTOR. Perforations may be circular or slotted, but shall provide a minimum inlet area of 1.0 square inch per 2.0 linear feet of pipe. CONTRACTOR shall submit fabric and pipe catalogue Specifications for approval by the CLIENT. CONTRACTOR shall bed and backfill the underdrain in one of the following IDOT gradations of aggregate (CA-5, CA-7, CA-11, CA-14 or CA-15).

MISCELLANEOUS

(1) All existing field drainage tile or storm sewers encountered or damaged during construction shall either be restored to their original condition, properly rerouted and/or connected to the storm sewer system.

(2) Footing drains shall be connected to sump pumps or discharged directly into storm sewers. Footing drains or drainage tile shall not be connected to the sanitary sewer.

CONNECTION FOR STORM SERVICE TO STORM MAIN

Connections of storm sewer services to storm sewer mains should be made with manufactured tees when available. Availability of manufactured tees will be a function of the storm sewer material and pipe diameter size of the service sewer and main. If manufactured tees are not reasonably available, connections should be made in accordance with manufacturer's recommendations for all storm sewer other than concrete pipe. For concrete pipe connections without manufactured tees the storm sewer main shall be machine cored and the service sewer connected using non-shrink grout for the void between pipes. The service sewer shall be cut flush with the inside wall of the sewer main and not extend into the inside flow area of the main or otherwise impede flow.

IV. ROADWAY AND PARKING LOT IMPROVEMENTS

STANDARDS

Work shall be completed in accordance with the applicable sections of the Standard Specifications for Road and Bridge Construction, Department of Transportation, State of Illinois, latest edition (hereinafter referred to collectively as the "Standard Specifications") except as modified below and except that payment will be defined as detailed in the contract documents between the CLIENT and the CONTRACTOR. Supplementing the Standard Specifications shall be the applicable sections of the latest editions of the "Supplemental Specifications and Recurring Special Provisions", the "Manual on Uniform Traffic Control Devices for Streets and Highways" and the Illinois Supplement thereto, (hereinafter referred to collectively as the "MUTCD"). Any references to "ENGINEER" in the "Standard Specifications" shall be interpreted as the CLIENT or CLIENT's Construction Representative.

SUBGRADE PREPARATION

The CONTRACTOR shall be responsible for all subgrade compaction and preparation to the lines and grades shown on the plans.

AGGREGATE BASE COURSE TYPE 'B'

Aggregate Base Course Type B shall be limited to CA-6 or CA-10 gradation. Aggregate base courses shall be proof rolled as outlined below.

PROOF ROLL

The CONTRACTOR shall proof roll the subgrade with either a 2-axle truck loaded to 27,000 lbs. Or a 3-axle truck loaded to 45,000 lbs. or as specified by the JURISDICTIONAL GOVERNING ENTITY. The CLIENT and JURISDICTIONAL GOVERNING ENTITY shall observe and approve the proof rolling of the subgrade and the base course. Proof rolling tolerances shall be a maximum deflection of 1" for the subgrade and ½" for the base course. The above criteria is intended as a maximum deflection standard and that proof rolling of a majority of the area will have less deflection than specified above. In any case of deficiency, the subgrade and/or base course shall be repaired and retested before proceeding with the pavement construction.

Pavement subgrade material shall not be removed, placed or disturbed after proof roll testing has been completed prior to the pavement construction. Additional testing will be required if the pavement subgrade is disturbed and/or material is removed from or placed on the pavement subgrade after proof rolling approval.

Trucks or heavy equipment shall not travel on any pavement subgrade after final testing prior to pavement construction.

HOT-MIX ASPHALT BASE COURSE

HMA Base Course shall meet the requirements of IDOT or N50 mix design as indicated and shown on the plans. The maximum amount of recycled asphalt pavement allowed shall be 30% in a N30 mix design and 25% in a N50 mix design.

HOT-MIX ASPHALT BINDER AND SURFACE COURSE

HMA binder and surface courses, shall be constructed to the compacted thickness as shown on the PLANS. The base course shall be cleaned and primed in accordance with the JURISDICTIONAL GOVERNING ENTITY. The surface course shall be placed after the base and courses have gone through one winter season, or as directed by the CLIENT. Before applying the surface course, the binder course shall be thoroughly cleaned and primed in accordance with the JURISDICTIONAL GOVERNING ENTITY. Prior to the placement of the surface course, the JURISDICTIONAL GOVERNING ENTITY shall examine the completed pavement, including curb and gutter, and all failures shall be corrected by the CONTRACTOR.

CONCRETE PAVEMENTS

Concrete pavements shall be constructed in accordance with American Concrete Institute Standard ACI330R-08 and as shown on the PLANS.

Slabs and driveway aprons shall be constructed with 6" x 6" - W1.4 x W1.4 welded wire fabric positioned on steel chair supports. Placing fabric during the concrete pouring operation will not be allowed.

Sawing of joints shall commence as soon as the concrete has cured and hardened sufficiently to permit sawing without excessive raveling, but no later than eight hours after the concrete has been placed. All joints shall be sawed to a depth equal to 1/3 of the pavement thickness before uncontrolled shrinkage cracking take place. If necessary, the sawing operation shall occur during the day or at night, regardless of weekends, holidays or weather conditions. The CONTRACTOR shall be aware of jurisdictional noise ordinances and holiday restrictions for scheduling purposes.

The CONTRACTOR is responsible to guard fresh concrete until it sets and hardens sufficiently to prevent people from writing, walking, riding bicycles or otherwise permanently marking, defacing or causing depressions of any type in the concrete. Any concrete so marked will be removed and replaced by the CONTRACTOR at the CONTRACTOR's expense.

The CONTRACTOR shall protect the pavement against all traffic, including that of their own employees or other workers, until test specimens have attained the specified strength.

SIDEWALKS

Concrete sidewalks shall be constructed to width and thickness as shown on the PLANS. Sidewalks shall be thickened to a minimum of 6" at all driveways. All sidewalks shall be IDOT Class SI concrete, on aggregate base as shown on the detail. A ¾" expansion joint shall be provided when meeting existing sidewalk.

CURB AND GUTTER

Curb and gutter shall be as per the detail shown on the PLANS, which shall include compacted aggregate base course under the curb and gutter. All contraction and expansion joints shall be constructed as per the detail.

CONCRETE CURB AND GUTTER REMOVAL AND REPLACEMENT

The CONTRACTOR shall saw cut and remove the existing concrete curb where shown on the PLANS and install a curb of similar cross section and pavement to that removed (or depressed curb and gutter if shown on the PLANS). Upon completion of the curb and gutter any voids between the existing pavement and the new curb shall be filled with concrete to within 2" of the final surface, which is to be filled with bituminous pavement. The area behind the curb shall be filled and compacted with embankment material within 6" of the top of the new curb. The CONTRACTOR shall then restore the remaining 6" to its original condition (i.e., sod, gravel, topsoil). Where proposed curb connects to an existing curb, the existing curb shall be saw cut and then two 18" long x ¾" (#6) dowel bars shall be drilled and installed 9" into the existing and proposed curb. Bars shall be installed in a location similar to the expansion joint in the curb.

FRAME ADJUSTMENTS

The road contractor shall be responsible for making final adjustments and the setting on a bituminous mastic jointing compound all castings located in the roadway, sidewalks, and parking areas prior to construction of any curbing, sidewalk, or final surface. Any structures that need to be lowered, or raised in excess of 4" shall be completed and the work backcharged against the underground contractor. This Contractor shall also be responsible for cleaning all of the above structures immediately upon completion of his phase of work. This work shall be incidental to the cost of the pavement.

PAVEMENT MARKING - PAINT

The CONTRACTOR shall furnish and apply painted marking lines, letters & symbols of the patterns, sizes and colors where shown on the PLANS. Paint pavement marking shall be applied in accordance with the IDOT Standard Specifications.

***PAVEMENT MARKING - THERMOPLASTIC** - INTENTIONALLY OMITTED*

QUALITY CONTROL

The CONTRACTOR shall provide all testing necessary to ensure improvements are in accordance with the project specifications and provide testing documentation that specifications were met.

SHOULD A CONFLICT ARISE BETWEEN THE MANHARD SPECIFICATIONS AND THE VILLAGE SPECIFICATIONS, THE VILLAGE SPECIFICATIONS TAKE PRECEDENCE.

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KIRBY SCHOOL DISTRICT 140
2023
NEW FERNWAY PARK ELEMENTARY SCHOOL
16600 S. 88TH AVENUE, ORLAND PARK, IL 60462

PROJECT NUMBER: 21-054.1
PROJECT MANAGER: MG
DRAWN BY:
ISSUED FOR BID:
10/30/2023

REVISIONS:
1
2
3
4
5

CONSTURCTION
SPECIFICATIONS

C22.00