BENCHMARK INFO

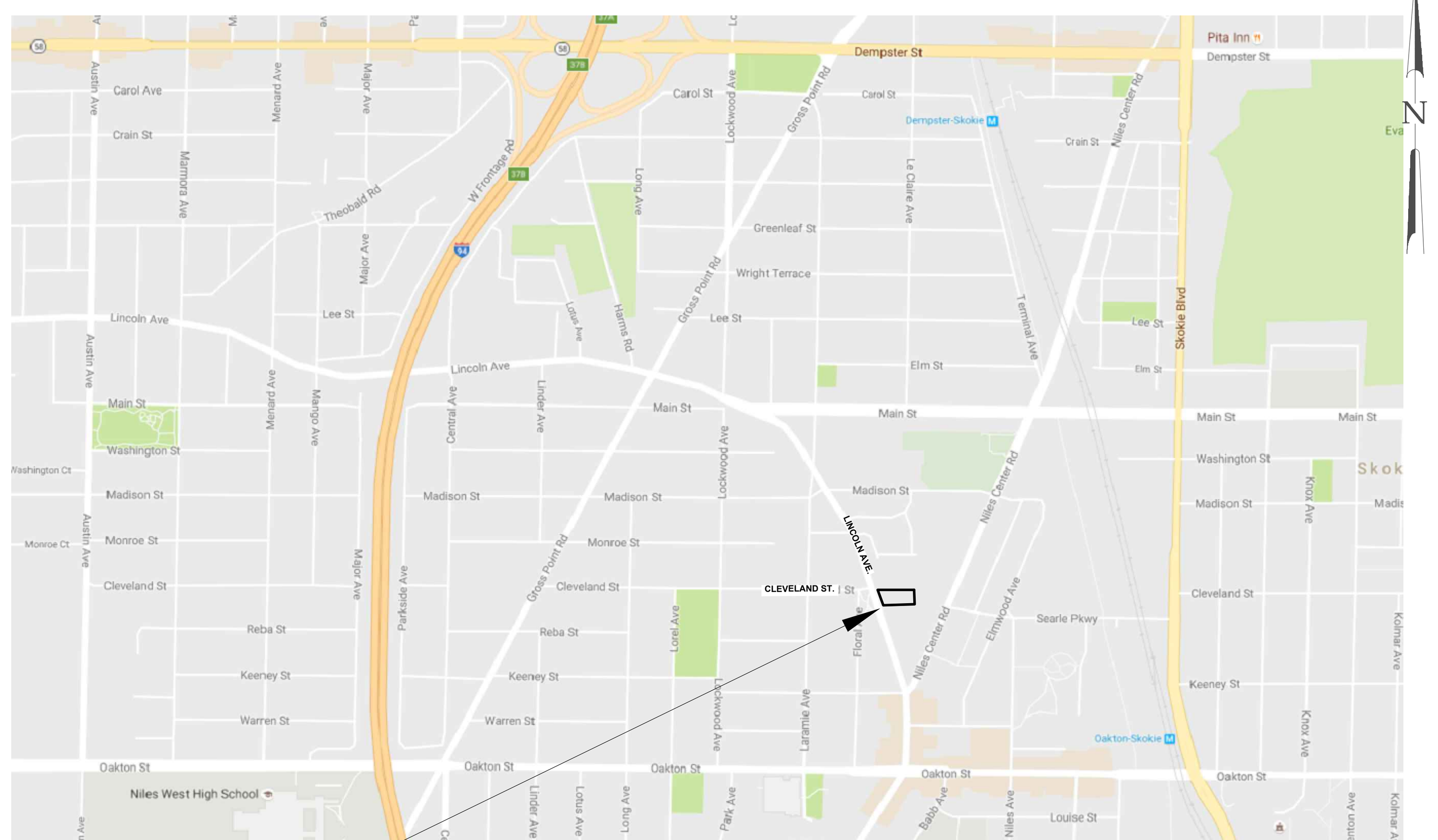
SITE BENCHMARK IS VILLAGE OF SKOKIE CONTROL MONUMENT, STATION NUMBER SK554. A 1" BRASS DISK LOCATED AT THE SOUTHWEST CORNER OF CLEVELAND St. & LINCOLN AVE.., ELEV. 621.42.

5 UNIT TOWNHOUSE DEVELOPMENT
SITE IMPROVEMENT PLAN
8163 N. LINCOLN AVE., SKOKIE, COOK COUNTY, IL

SECTION: 21
TOWNSHIP: 41N
RANGE: 13E

PIN: 10-21-405-040

SITE LOCATION MAP



SITE

DRAWING INDEX:

AERIAL MAP

1. I HEREBY CERTIFY THAT THE PROPOSED IMPROVEMENTS WILL NOT ADVERSELY IMPACT THE SUBJECT PROPERTY, THE SURROUNDING PROPERTIES OR THE PUBLIC RIGHT–OF–WAY WITH RESPECT TO STORMWATER DRAINAGE, AND THAT A SAFE OVERFLOW ROUTE HAS BEEN ESTABLISHED.

2. I HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE PROPOSED IMPROVEMENT IS NOT LOCATED IN FLOOD PROTECTION AREAS BASED ON THE INFORMATION FROM THE FEMA MAPS.

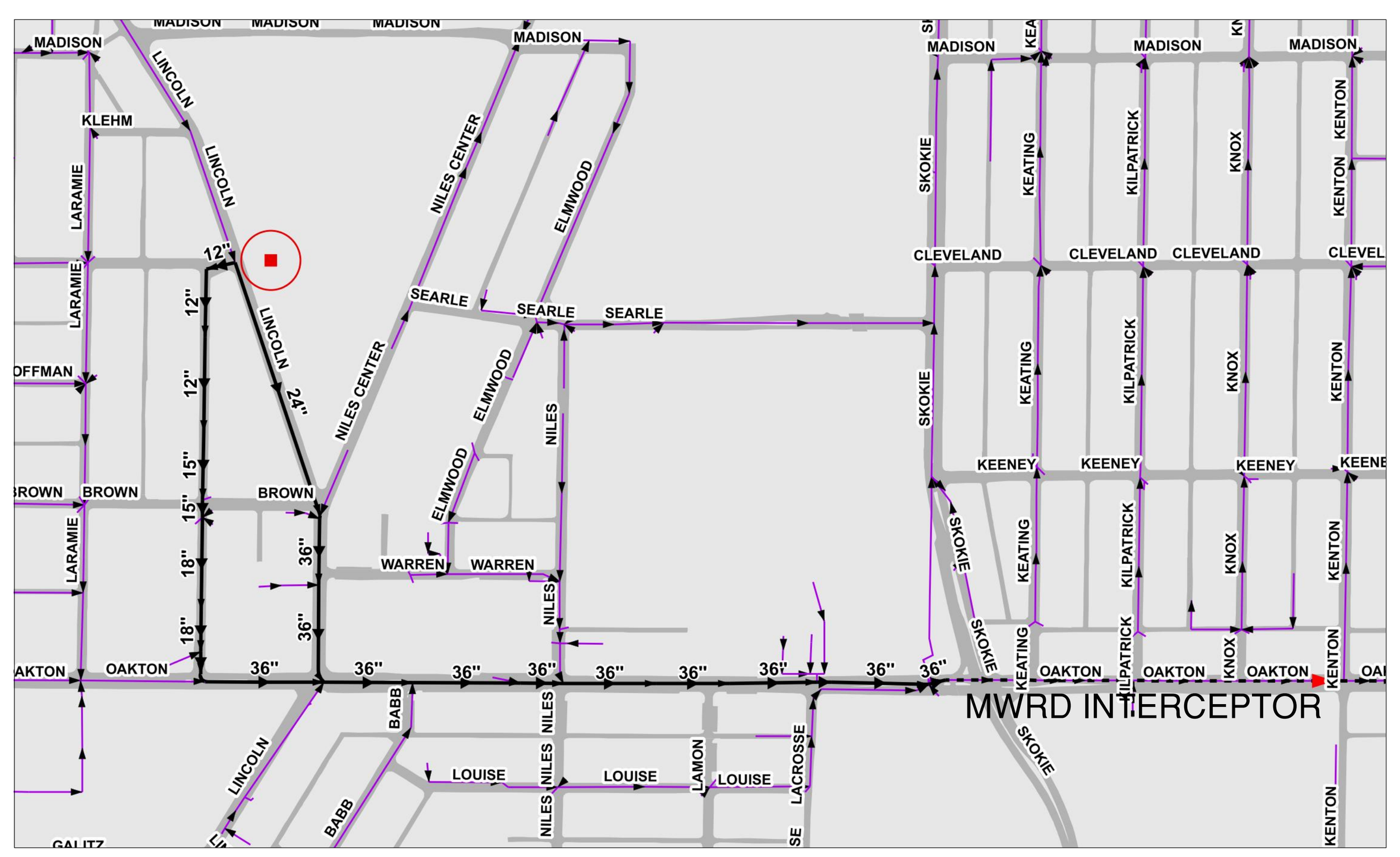
ENGINEER

9/25/2017

DATE

COMBINED SEWER ROUTE MAP

SEWERS BETWEEN SITE AND MWRD INTERCEPTOR ARE OWNED BY SKOKIE



PROJECT NARRATIVE

GENERAL: PROPOSED 5 UNIT DEVELOPMENT IS PROPOSED ON A .221 AC. LOT WITH EXISTING SINGLE FAMILY RESIDENCE.

AREA SUMMARY:
TOTAL AREA OF SITE: 0.221 ACRES
DISTURBED AREA OF SITE: 0.221 ACRES

SPECIAL PROTECTION AREAS: NO FLOODPLAIN WITHIN 100' OF SITE. THERE ARE NO WETLANDS WITHIN 100' OF SITE.

UPSTREAM TRIBUTARY: THERE IS NO UPSTREAM TRIBUTARY AREA FOR THE SITE.

COMBINED/SEPARATE SEWER AREA INFO: PROPOSED PROJECT IS LOCATED IN COMBINED SEWER AREAS.

DETENTION/VOLUME CONTROL FACILITY: DETENTION (SITE AREA<3AC.) IS PER LOCAL REQUIREMENT AND VOLUME CONTROL (SITE AREA<0.5AC.) IS NOT REQUIRED PER MWRD REGULATIONS.

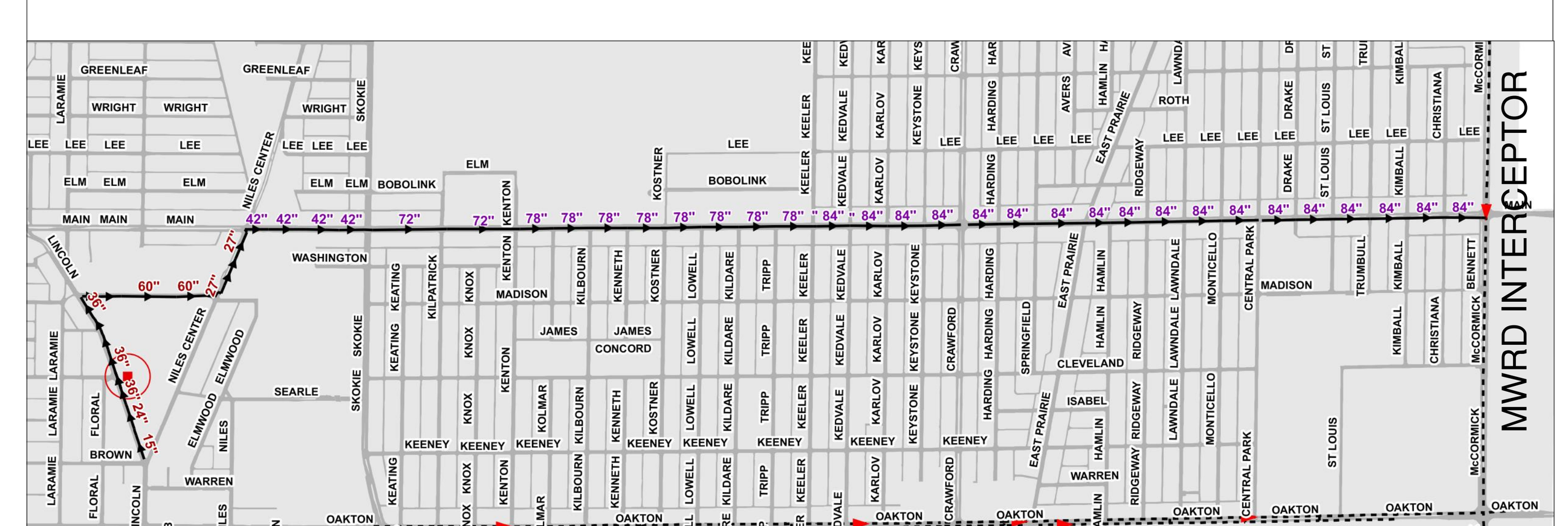
SANITARY SEWERS: AN 8" SANITARY MAIN IS PROPOSED WITH TWO MANHOLES AND PROVIDED 5 SEPARATE SERVICES, ONE FOR EACH TOWNHOUSE.

SOILS/INFILTRATION RATE: STIFF SILTY CLAY

GROUNDWATER ELEVATION: N/A

RELIEF SEWER ROUTE MAP

SEWERS BETWEEN SITE AND MWRD INTERCEPTOR ARE OWNED BY SKOKIE



NOTE

The location of existing underground utilities, such as water mains, sewers, gas lines, etc., as shown on the plans, has been determined from the best available information and is given for the convenience of the Contractor. However, the Owner and the Engineer do not assume responsibility in the event that during construction, utilities other than those shown may be encountered, and that the actual location of those which are shown may be different from the location as shown on the plans.

Bono Consulting, Inc. is not responsible for the safety of any party at or on the construction site. Safety is the sole responsibility of the contractor and any other person or entity performing work or services. Neither the owner nor engineer assumes any responsibility for the job site safety of persons engaged in the work or the means or methods of construction.

Current Standard Specifications of the Judicial Authority shall apply to the construction on this project.

Note: The exact location of all utilities shall be verified by the contractor prior to construction activities. For utility locations call:
J.U.L.I.E. 1 (800) 892-0123

LEGEND:

	EXISTING	PROPOSED
PROPERTY LINE		
SANITARY SEWER LINE		
WATER LINE	W	W
STORM SEWER LINE		
STORM MANHOLE		●
SANITARY MANHOLE		
COMBINED SEWER		
COMBINED MANHOLE		
CATCH BASIN	●	●
INLET	○	■
WATER VALVE VAULT		W
WATER VALVE		V
GRADE	× 597.32	597.55
DRAINAGE DIVIDE		
CURB & GUTTER		
CLEANOUT		○CO
DOWNSPOUT (ROOF DRAINS)	○DS	●DS
WATER B. BOX		○BB
TREE PROTECTION FENCE		
CONSTRUCTION FENCE		CF
INLET FILTER BASKET		
TRAFFIC DIRECTION PAVEMENT MARKING		
FIRE HYDRANT		
RETAINING WALL W/RAILING		
TOP OF CURB BOTTOM OF CURB		T/C XXX.XX B/C XXX.XX
TOP OF CURB BOTTOM OF GUTTER		T/C XXX.XX B/G XXX.XX
WALK BOTTOM OF WALK		W XXX.XX B/W XXX.XX
DESPRESSED CURB BOTTOM OF GUTTER		D/C XXX.XX B/G XXX.XX
MOUNTABLE CURB		M/C XXX.XX B/C XXX.XX

DATE	REVISIONS	ISSUE
09-08-2016	PRELIMINARY PLAN	A
10-18-2016	ISSUED FOR PERMIT	1
01-04-2017	REVISED PER VILLAGE COMMENTS	2
01-24-2017	REVISIONS PER MWRD/IDOT COMMENTS	3
03-27-2017	REVISIONS PER MWRD/IDOT COMMENTS	4
05-11-2017	REVISIONS PER MWRD/IEPA/IDOT COMMENTS	5
10-12-2017	REVISIONS PER MWRD COMMENTS-CHANGED DETENTION PIPE TO CONCRETE.	6

PROJECT STAFF
PROJECT MANAGER: B. BONO P.E.
ENGINEER: A. VEER P.E.
ENGINEER:
TECHNICIAN:

BCI
BONO CONSULTING, INC.
CIVIL ENGINEERS
1018 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH : (847) 823-3300
FAX: (847) 823-3303
bbono@bonoconsulting.com

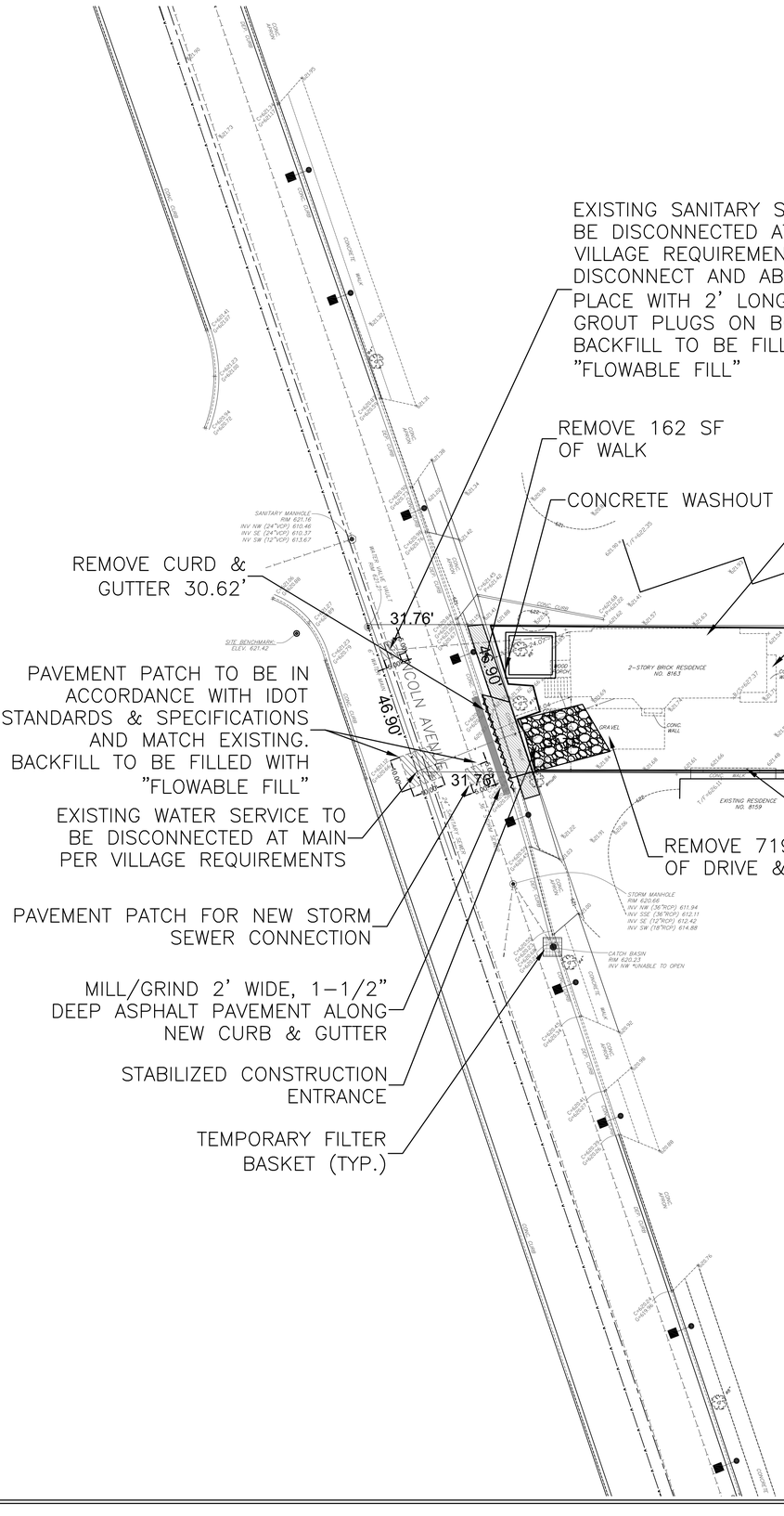
BERNARD A. BONO
062–044068
REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

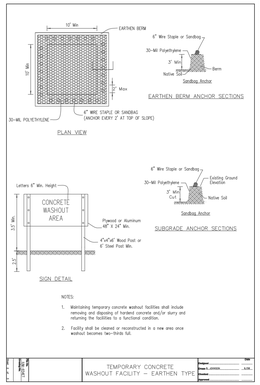
EXP. 11/30/17

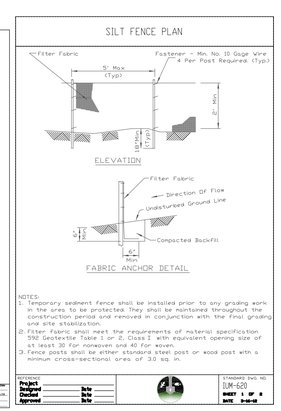
TITLE SHEET, LEGEND, SITE LOCATION MAP, & AERIAL MAP

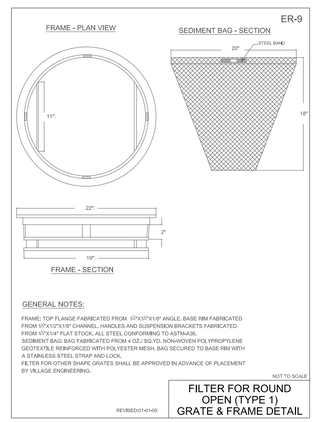
5 UNIT TOWNHOUSE DEVELOPMENT
8163 N. LINCOLN, SKOKIE, ILLINOIS

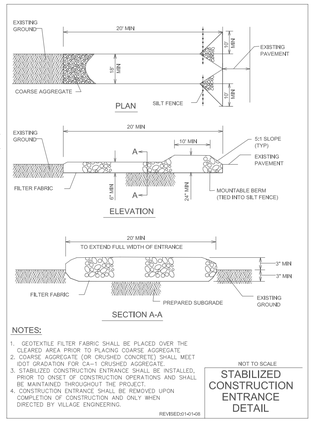
PROJECT NUMBER: 16189
START DATE: AUG 28, 2016
GRAPHIC SCALE
0
SCALE: NTS
SHEET NUMBER
1 OF 11

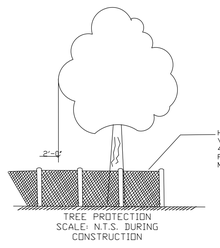












BEST MANAGEMENT PRACTICES SEQUENCE

NOTE: UPON IMPLEMENTATION AND INSTALLATION OF THE FOLLOWING AREAS: TRAILER, PARKING, LAY DOWN, PORTA-POTTY, WHEEL WASH, CONCRETE WASHOUT, MASON'S AREA, FUEL AND MATERIAL STORAGE CONTAINERS, SOLID WASTE CONTAINERS, ETC., IMMEDIATELY DENOTE THEM ON THE SITE MAPS AND NOTE ANY CHANGES IN LOCATION AS THEY OCCUR THROUGHOUT THE CONSTRUCTION PROCESS. IN ADDITION, NOTE ANY OFF-SITE AREAS WHERE FILL IS IMPORTED FROM OR SOIL IS EXPORTED TO ON THE SITE MAPS.

PHASE - I
1. INSTALL TREE PROTECTION FENCING AND EROSION CONTROL SILT FENCE, INLET FILTER BASKETS, MAINTAIN THROUGH OUT PROJECT.
2. USE LINCOLN AVE. FOR CONSTRUCTION ACCESS, USE DRIVEWAY FOR CONSTRUCTION. INSTALL STABILIZED CONSTRUCTION ENTRANCE. OBSERVE ALL APPROPRIATE MUTCD/IDOT TRAFFIC CONTROL MEASURES FOR CONSTRUCTION TRAFFIC ENTERING HIGHWAY. CONTRACTOR IS RESPONSIBLE FOR KEEPING ROADS FREE OF MUD AND DEBRIS.
3. PROTECT TREES THAT ARE SHOWN TO BE PROTECTED.
4. CLEAR AND REMOVE BRUSH AND TREES.
5. CONSTRUCT DETENTION FACILITY WITHIN 30DAYS OF TREE REMOVAL/BRUSH CLEARING.
6. INSTALL UTILITIES AND PERFORM MASS GRADING.

HALT ALL ACTIVITIES AND CONTACT THE VILLAGE TO PERFORM INSPECTION AND CERTIFICATION OF BMPs. GENERAL CONTRACTOR SHALL SCHEDULE AND CONDUCT THE STORMWATER PRE-CONSTRUCTION MEETING WITH THE CONSTRUCTION MANAGER, AGENCY(IES) AND GROUND-DISTURBING CONTRACTORS BEFORE PROCEEDING WITH CONSTRUCTION.

ALL EXCEPTIONS NOTED ON THE BMP CERTIFICATION FORM MUST BE ADDED TO THE FIRST DAILY REPORT AS A DEFICIENCY OR DEFICIENCIES AND RESOLVED WITHIN 24-HOURS. BMPs CAN NOT BE CERTIFIED IF ANY EXCEPTION REQUIRES GREATER THAN 24-HOURS TO RESOLVE.

DAILY INSPECTIONS AND REPORTING USING THE SWPPP MANAGEMENT TOOL MUST START THE DAY OF OR IMMEDIATELY AFTER BMP CERTIFICATION.

7. CONSTRUCT AND STABILIZE SEDIMENT BASIN(S) AND SEDIMENT TRAP(S) WITH APPROPRIATE OUTFALL STRUCTURES (CLEAR ONLY THOSE AREAS NECESSARY TO INSTALL BASINS AND TRAPS).
8. INSTALL AND STABILIZE HYDRAULIC CONTROL STRUCTURES (DIKES, SWALES, CHECK DAMS, ETC.).
9. BEGIN CLEARING AND GRUBBING THE SITE.
10. BEGIN GRADING THE SITE.

PHASE - II
1. TEMPORARILY SEED, THROUGHOUT CONSTRUCTION, DENUDED AREAS THAT WILL BE INACTIVE FOR 7 DAYS OR MORE, IF ACTIVITY WILL RESUME WITHIN 14 DAYS, TEMPORARY SEEDING IS NOT REQUIRED.
2. INSTALL UTILITIES, UNDERDRAINS, STORM SEWERS, CURBS AND GUTTERS.
3. INSTALL RIP RAP AROUND OUTLET STRUCTURES AS EACH OUTLET STRUCTURE IS INSTALLED.
4. INSTALL INLET PROTECTION AT ALL STORM SEWER STRUCTURES AS EACH INLET STRUCTURE IS INSTALLED.
5. PERMANENTLY STABILIZE AREAS TO BE VEGETATED AS THEY ARE BROUGHT TO FINAL GRADE.
6. PREPARE SITE FOR PAVING.
7. PAVE SITE.
8. INSTALL APPROPRIATE INLET PROTECTION DEVICES FOR PAVED AREAS AS WORK PROGRESSES.
9. COMPLETE GRADING AND INSTALLATION OF PERMANENT STABILIZATION OVER ALL AREAS.
10. CONTINUE DAILY INSPECTION REPORTS UNTIL THE FINAL DAILY INSPECTION REPORT, MARKED 'READY TO TERMINATE PERMIT', IS SIGNED BY THE CONSTRUCTION MANAGER AND SUBMITTED VIA THE SWPPP MANAGEMENT TOOL.
11. STABILIZE SITE AND INSTALL ALL FENCES CONCURRENTLY.

NOTE: THE GENERAL CONTRACTOR MAY COMPLETE CONSTRUCTION-RELATED ACTIVITIES CONCURRENTLY ONLY IF ALL PRECEDING BMPs HAVE BEEN COMPLETELY INSTALLED.

EARTHWORK / EROSION & SEDIMENTATION CONTROL

1) All construction activities that involve earthwork shall meet the National Pollutant Discharge Elimination System Phase II requirements:
   a) ~~Submittal of a Notice of Intent (NOI) to IEPA.~~
   b) Possession of a completed and signed Stormwater Pollution Prevention Plan (SWPPP) and a graphic Erosion and Sediment Control (ESC) plan.
   c) Implementation of the SWPPP.
   d) Submittal of an Incidence of Noncompliance (ION) if an event occurs.
   e) Weekly reports after ½" rainfall or 5" snowfall.
   f) Documentation of changes to ESC plan.
   g) ~~Submittal of a Notice of Termination (NOT) when final stabilization is achieved.~~
2) Any wetland mitigation shall begin prior to any grading work and shall be in accordance with the approved mitigation permit plan and requirements.
3) In order to protect and ensure against flooding, all top of foundations shall be set a minimum of one (1') foot above the high water level of adjacent stormwater management facilities such as retention/detention ponds.
4) The contractor shall maintain existing positive drainage from off-site at all times during construction.
5) Within the limits of proposed grading the soil shall be compacted to not less than the following percentages of modified proctor dry density in accordance with ASTM D 1557-78:
   a) Under structures, Building slabs, steps and pavements, Compact six (6") inch maximum lifts of subgrade. Backfill or fill material at 95% modified proctor dry density.
   b) Under walkways, Compact six (6") inch maximum lifts of dry subgrade, backfill, or fill material at 95% modified proctor dry density.
   c) Under lawn or unpaved areas. Compact six (6") inch maximum lifts of subgrade, backfill, or fill material at 85% modified proctor dry density.
6) All erosion control work shall comply with "Illinois Procedures and Standards for Urban Soil Erosion and Sedimentation Control."
7) Stripping of vegetation, grading or other soil disturbance, especially in designated wetland areas, shall be done in a manner which will minimize soil erosion, and shall be in accordance with the approved drawings, mitigation and permit requirements.
8) The contractor shall take precautionary measures to minimize earthwork in areas where trees are to be saved as shown on the plans or determined in the field.
9) The extent of the area which is exposed and free of vegetation and the duration of its exposure shall be kept within practical limits as directed by the Village Engineer.
10) Sedimentation shall be retained on site. Sediment fence shall be installed along the perimeter of all regraded areas or as required to prevent sediment from entering and/or leaving the site.
11) Dust produced from the site shall be kept to a minimum during dry periods by spraying water as required to the Village Engineer's satisfaction and is to be considered incidental.
12) All mud shall be removed from all tires before leaving the site and the roads shall be kept clean and clear of mud and debris at all times.
13) Culverts and drainage ditches shall be kept clean and clear of obstructions during the construction period.
14) Silt fences shall be inspected frequently and maintained or replaced as required to maintain both their effectiveness and integrity. The underside of bales shall be kept in close contact with the earth below at all times to prevent water from washing beneath them.
15) Water courses and drainage swales adjacent to construction activities shall be monitored as necessary, for evidence of silt intrusion and other adverse environmental impacts. Any problems or deficiencies shall be corrected immediately upon their discovery.
16) Sod all unpaved areas of parkways, right-of-ways and front yards to rear wall of the building. Any and all **other** site seeding **may** be used, in some instance particularly for the back yard, only with prior approval by the Village Engineer.
17) The contractor shall install all erosion control items prior to commencement of any work.
18) The contractor shall install temporary orange fence around all trees to remain and wetland areas to be mitigated.

DEMOLITION NOTES

1. Install temporary tree protection fencing prior to any demolition work..
2. Install temporary 6' high chain link fence around the proposed work area as shown on the drawing.
3. Contractor to call julie at 1-800-892-0123. minimum of 48 hours prior to initiating any excavation or demolition.
4. Contractor shall verify the exact elevation and location of all existing utilities and appurtenances prior to construction, to avoid interferences.
5. Appropriate precautions shall be taken to avoid damage to and to protect existing utilities and appurtenances in the vicinity of work. Contractor shall be responsible for the protection of all underground or overhead utilities even though they may not be shown on the plans. any utility that is damaged during construction shall be repaired to the satisfaction of the Village and the owner, or replaced.
6. Any open excavations, or potentially dangerous areas shall be fenced or guarded in an acceptable manner at the end of each day for the protection of the contractor's employees and general public safety.
7. **Bono Consulting Inc is not liable for any construction site safety**. Contractor to take all OSHA regulated and applicable local safety precautions to safe guard all potentially hazard sites/work.
8. Contractor is responsible for keeping roads free of excessive debris at all times.
9. Any soil, mud or debris that is washed, tracked, or deposited onto the street shall be removed before the end of each day.
10. Topographic survey by Bono Consulting Inc.
11. All excavation shall be tapered, or, shored and maintained pumped dry.
12. Do not create dust or other nuisance to neighboring properties during construction
13. "No trespassing" signs shall be mounted on the fencing in conspicuous locations until construction is completed and approved
14. Any gate in the perimeter fence shall be adequately hinged to prevent entry, except to allow ingress and egress to and from site, such gate must be looked at all times, other than permitted hours of construction.

SEEDING INFORMATION

CONTRACTOR TO SEED ALL DISTURBED AREA.

TURF GRASS SEED MIX:

FURNISH AND APPLY SUNNY TURF GRASS SEED MIX (TIMOTHY-33.3% / ORCHARDGRASS-33.3% / KENTUCKY BLUEGRASS-33.3%, SEEDING RATE=70 LBS./ACRE AND COMMON OATS=30 LBS./ACRE FOR A TOTAL 100 LBS./ACRE. OVERSEED WITH 10 LBS./ACRE ANNUAL RYE. SEEDING MUST COMMENCE WITHIN 1 WEEK OF THE COMPLETION OF FINAL GRADING.

Temporary Seeding, Species, Rates, & Dates

		Seeding Dates											
Species	lbs./Acre	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Oats	90			■	■	■							
Cereal Rye	90						■	■	■				
Winter Wheat	90									■	■	■	
Winter Mulch	25	■	■										■

SOIL EROSION/SEDIMENTATION CONTROL OPERATION TIME SCHEDULE

NOTE: GENERAL CONTRACTOR TO COMPLETE TABLE WITH THEIR SPECIFIC PROJECT SCHEDULE

CONSTRUCTION SEQUENCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
TEMPORARY CONSTRUCTION EXITS				■																					
TEMPORARY CONTROL MEASURES				■	■	■	■	■	■	■	■	■													
SEDIMENT CONTROL BASINS				■	■																				
STRIP & STOCKPILE TOPSOIL				■																					
ROUGH GRADE				■	■																				
STORM FACILITIES				■	■	■																			
SITE CONSTRUCTION						■	■	■																	
PERMANENT CONTROL STRUCTURES						■	■	■	■	■	■														
FOUNDATION / BUILDING CONSTRUCTION						■	■	■	■	■	■														
FINISH GRADING												■	■												
LANDSCAPING/SEED/FINAL STABILIZATION												■	■												

1) CONTRACTOR SHALL UPDATE THE TABLE BY DATING THE APPLICABLE ACTIVITIES AS PROJECT PROGRESSES.
2) TIME SCHEDULE MUST COINCIDE WITH SEQUENCE OF CONSTRUCTION.

ISSUE	REVISIONS	DATE
A	PRELIMINARY PLAN	09-08-2016
1	ISSUED FOR PERMIT	10-18-2016
2	REVISED PER VILLAGE COMMENTS	01-04-2017
3	REVISIONS PER MWRDGOT COMMENTS	01-24-2017
4	REVISIONS PER MWRDGOT COMMENTS	03-27-2017
5	REVISIONS PER MWRDGOT COMMENTS	05-11-2017
6	REVISIONS TO DIRECT CONNECTED DETENTION PIPE TO CONCRETE	10-12-2017

PROJECT STAFF
PROJECT MANAGER: B. BONO P.E. A
ENGINEER: A. VEER P.E. 1
ENGINEER: 2
TECHNICIAN: 3
4
5
6

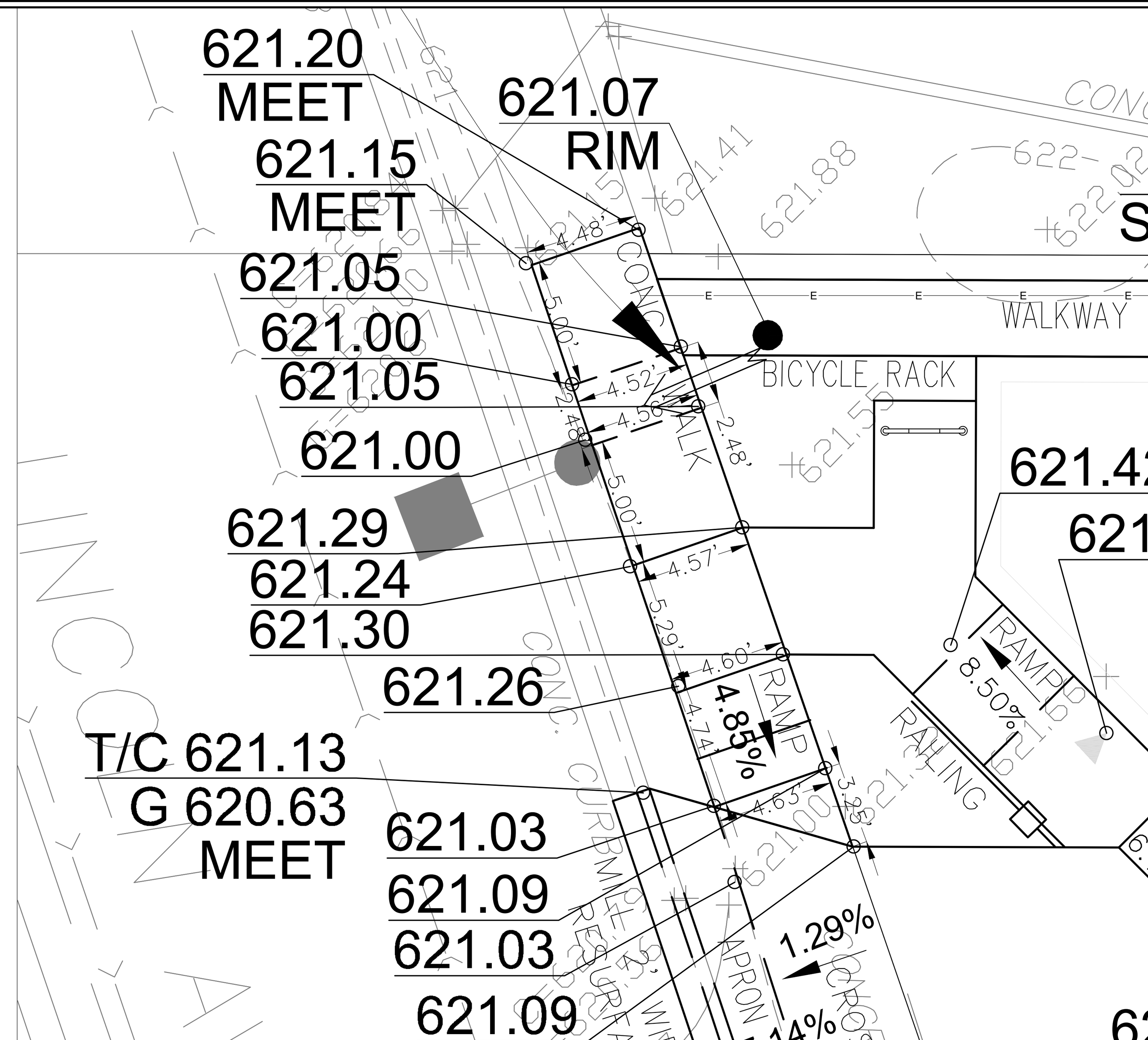
BCI
BONO CONSULTING, INC.
CIVIL ENGINEERS
1018 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH : (847) 823-3300
FAX: (847) 823-3303
boono@bonoconsulting.com

EXIST. TOPOGRAPHY, DEMOLITION, EROSION AND SEDIMENTATION CONTROL PLAN

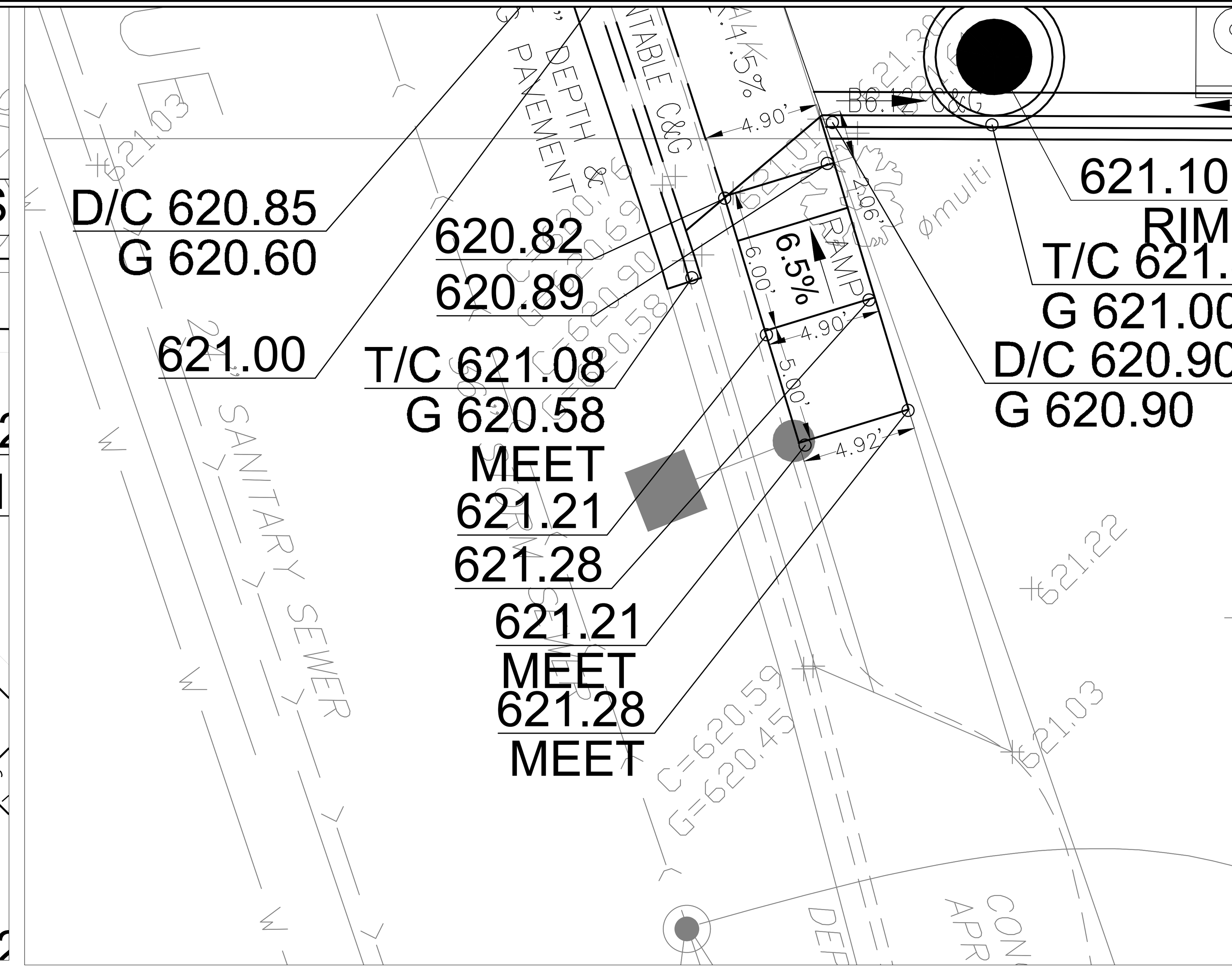
5 UNIT TOWNHOUSE DEVELOPMENT
8163 N. LINCOLN, SKOKIE, ILLINOIS

PROJECT NUMBER: 16189
START DATE: AUG 28, 2016
GRAPHIC SCALE
30 0 30
SCALE: 1"=30'-0

SHEET NUMBER
2 OF 11



NORTH CURB RAMP DETAIL
SCALE 1" = 5'



SOUTH CURB RAMP DETAIL
SCALE 1" = 5'

Skokie (MOD.RATIONAL METHOD)
BULLETIN 70 RAINFALL, 100 YEAR STORM

Project: 8163 Lincoln, Skokie — Project No: 16189
Date: 12.14.2016 — Computed By: A. Veer

STORAGE REQUIRED PER SKOKIE

Land UseType	Runoff Coefficient	Area (Sq. Ft.)	Area (Acres)	Percentage
Lot Size		9607	0.221	100%
Proposed Impervious	0.95	8820	0.202	91.8%
Proposed Grass & Landscaping	0.45	788	0.018	8.2%

Composite Characteristics: ***0.91***

RESTRICTOR CALCULATION

Orifice Design			
Require Q =	0.033 cfs	Det. HWL =	619.00
Cd =	0.61	Orifice Invert:	613.60
Max. Head =	5.32	Orifice Cent.	613.68
Orifice Area:	0.0218		
Calculated Max. Restrictor Discharge:		0.246	

Restrictor Diameter = ***2 inches***

USE 2.0" DIAMETER PIPE

Actual Detention Stored

Orifice Size =	**2 Inch**		
Require Q =	0.033 cfs	Det. HWL =	619.00
Cd =	0.61	Orifice Invert:	613.60
Max. Head =	5.32	Orifice Cent.	613.68
Orifice Area:	0.0218		
Calculated Max. Restrictor Discharge:		0.246	

Storm Duration (Min)	Storm Duration (Hours)	Rainfall Intensity (Inch/Hour)	Inflow Rate (CFS)	Release Rate (CFS)	Storage Rate (CFS)	Storage Required (Acre-Feet)
5	0.08	10.92	2.19	**0.246**	1.94	0.013
10	0.17	10.02	2.01	**0.246**	1.76	0.024
15	0.25	8.20	1.64	**0.246**	1.40	0.029
20	0.33	6.90	1.38	**0.246**	1.14	0.031
30	0.50	5.60	1.12	**0.246**	0.88	0.037
40	0.67	4.58	0.92	**0.246**	0.67	0.038
50	0.83	3.97	0.80	**0.246**	0.55	0.038
60	1.00	3.56	0.71	**0.246**	0.47	0.039
90	1.50	2.68	0.54	**0.246**	0.29	0.036
120	2.00	2.24	0.45	**0.246**	0.20	0.034
180	3.00	1.62	0.32	**0.246**	0.08	0.020
240	4.00	1.28	0.26	**0.246**	0.01	0.003
300	5.00	1.08	0.22	**0.246**	-0.03	-0.012
360	6.00	0.95	0.19	**0.246**	-0.06	-0.028
420	7.00	0.83	0.17	**0.246**	-0.08	-0.047
480	8.00	0.75	0.15	**0.246**	-0.10	-0.064
540	9.00	0.68	0.14	**0.246**	-0.11	-0.082
600	10.00	0.63	0.13	**0.246**	-0.12	-0.100
660	11.00	0.59	0.12	**0.246**	-0.13	-0.117
720	12.00	0.55	0.11	**0.246**	-0.14	-0.136
780	13.00	0.51	0.10	**0.246**	-0.14	-0.156
840	14.00	0.48	0.10	**0.246**	-0.15	-0.175
900	15.00	0.45	0.09	**0.246**	-0.16	-0.195
960	16.00	0.43	0.09	**0.246**	-0.16	-0.213
1020	17.00	0.41	0.08	**0.246**	-0.16	-0.232
1080	18.00	0.39	0.08	**0.246**	-0.17	-0.252
1140	19.00	0.37	0.07	**0.246**	-0.17	-0.272
1200	20.00	0.36	0.07	**0.246**	-0.17	-0.290
1260	21.00	0.35	0.07	**0.246**	-0.18	-0.308
1320	22.00	0.34	0.07	**0.246**	-0.18	-0.326
1380	23.00	0.33	0.07	**0.246**	-0.18	-0.345
1440	24.00	0.32	0.06	**0.246**	-0.18	-0.364

Actual Storage Required With 2" Restrictor = **0.039** **Acre-Feet**
Actual Storage Required With 2" Restrictor = **1,696.93** **ft³**

DETENTION VOLUME

1) **Pipe Storage (From Structure to Structure)**

Pipe ID	Pipe Size	Length (ft.)	Unit Volume	Vol. (cu.ft.)
ST-04	60	88	19.635	1,727.88
				1,728

TOTAL DETENTION PROVIDED 1,728 < 1,697

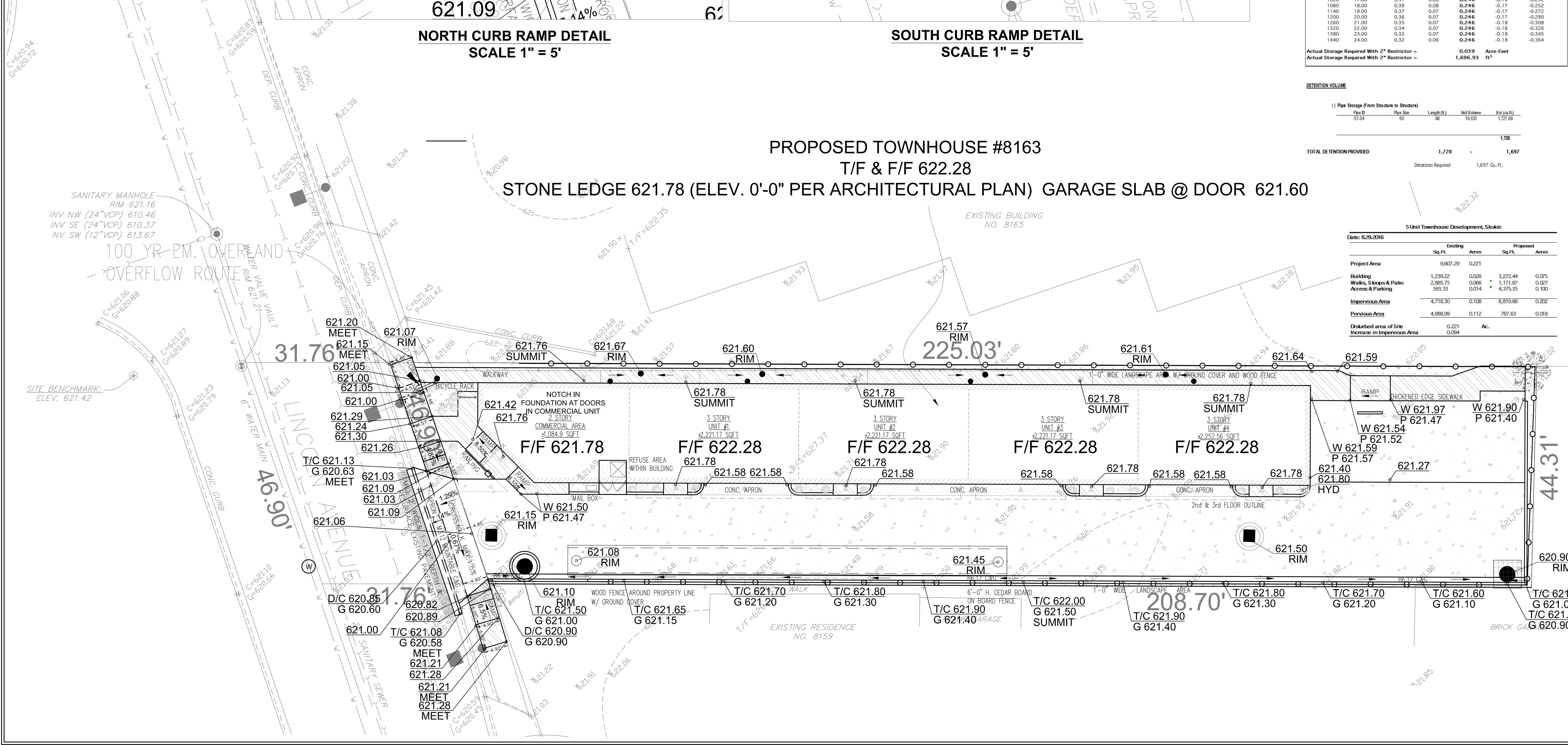
Detention Required 1,697 Cu. Ft.

PROPOSED TOWNHOUSE #8163
T/F & F/F 622.28
STONE LEDGE 621.78 (ELEV. 0'-0" PER ARCHITECTURAL PLAN) GARAGE SLAB @ DOOR 621.60

5 Unit Townhouse Development, Skokie

Date: 8.29.2016

	Existing Sq. Ft.	Existing Acres	Proposed Sq. Ft.	Proposed Acres
Project Area	9,607.29	0.221		
Building	1,239.22	0.028	3,272.44	0.075
Walks, Stoops & Patio	2,885.75	0.066	1,171.87	0.027
Access & Parking	593.33	0.014	4,375.35	0.100
Impervious Area	4,718.30	0.108	8,819.66	0.202
Pervious Area	4,888.99	0.112	787.63	0.018
Disturbed area of Site	0.221	Ac.		
Increase in Impervious Area	0.094			



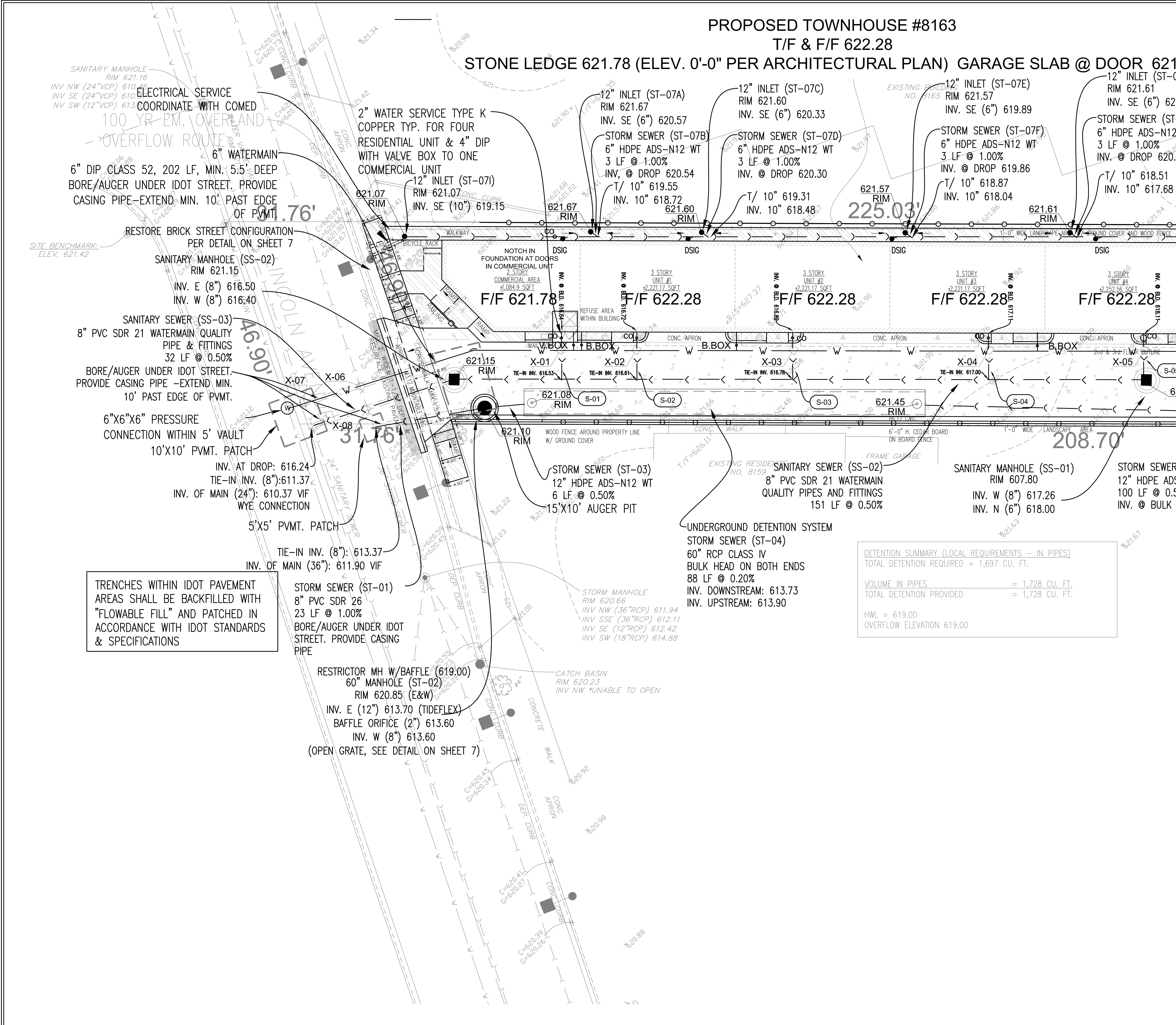
DATE	REVISIONS	ISSUE
09-08-2016	PRELIMINARY PLAN	A
10-18-2016	ISSUED FOR PERMIT	1
01-04-2017	REVISED PER VILLAGE COMMENTS	2
01-24-2017	REVISIONS PER MWRD/IDOT COMMENTS	3
03-27-2017	REVISIONS PER MWRD/IDOT COMMENTS	4
05-11-2017	REVISIONS PER MWRD/IEPA/IDOT COMMENTS	5
10-12-2017	REVISIONS PER MWRD COMMENTS-CHANGED DETENTION PIPE TO CONCRETE.	6

PROJECT STAFF
PROJECT MANAGER: B. BONO P.E.
ENGINEER: A. VEER P.E.
ENGINEER:
TECHNICIAN:

BCI
BONO CONSULTING, INC.
CIVIL ENGINEERS
1018 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH : (847) 823-3300
FAX: (847) 823-3303
bbono@bonoconsulting.com

PROPOSED GRADING & DRAINAGE PLAN
OVERALL SITE
5 UNIT TOWNHOUSE DEVELOPMENT
8163 N. LINCOLN, SKOKIE, ILLINOIS

PROJECT NUMBER: 16189
START DATE: AUG 28, 2016
GRAPHIC SCALE 30 0 30
SCALE: 1"=20'-0
SHEET NUMBER
3 OF 11


PROPOSED TOWNHOUSE #8163
T/F & F/F 622.28
STONE LEDGE 621.78 (ELEV. 0'-0" PER ARCHITECTURAL PLAN) GARAGE SLAB @ DOOR 621.60
SANITARY MANHOLE
RIM 621.16
INV NW (24"VCP) 610.46
INV SE (24"VCP) 610.57
INV SW (12"VCP) 613.6
ELECTRICAL SERVICE COORDINATE WITH COMED
100 YR EM. OVERLAND OVERFLOW ROUTE
6" WATERMAIN
6" DIP CLASS 52, 202 LF, MIN. 5.5' DEEP BORE/AUGER UNDER IDOT STREET. PROVIDE CASING PIPE-EXTEND MIN. 10' PAST EDGE OF PVMT.
2" WATER SERVICE TYPE K COPPER TYP. FOR FOUR RESIDENTIAL UNIT & 4" DIP WITH VALVE BOX TO ONE COMMERCIAL UNIT
12" INLET (ST-07I)
RIM 621.07
INV. SE (10") 619.15
12" INLET (ST-07A)
RIM 621.67
INV. SE (6") 620.57
STORM SEWER (ST-07B)
6" HDPE ADS-N12 WT
3 LF @ 1.00%
INV, @ DROP 620.54
T/ 10" 619.55
INV. 10" 618.72
12" INLET (ST-07C)
RIM 621.60
INV. SE (6") 620.33
STORM SEWER (ST-07D)
6" HDPE ADS-N12 WT
3 LF @ 1.00%
INV. @ DROP 620.30
T/ 10" 619.31
INV. 10" 618.48
12" INLET (ST-07E)
RIM 621.57
INV. SE (6") 619.89
STORM SEWER (ST-07F)
6" HDPE ADS-N12 WT
3 LF @ 1.00%
INV. @ DROP 619.86
T/ 10" 618.87
INV. 10" 618.04
12" INLET (ST-07G)
RIM 621.61
INV. SE (6") 620.52
STORM SEWER (ST-07H)
6" HDPE ADS-N12 WT
3 LF @ 1.00%
INV. @ DROP 620.49
T/ 10" 618.51
INV. 10" 617.68
STORM SEWER (ST-07)
10" HDPE ADS-N12 WT
225 LF @ 1.00%
INV. @ CO 618.82
(W. END 619.15)
N
31.76'
46.90'
225.03'
208.70'
44.31'
LINCOLN AVE
RESTORE BRICK STREET CONFIGURATION PER DETAIL ON SHEET 7
SITE BENCHMARK: ELEV. 621.42
SANITARY MANHOLE (SS-02)
RIM 621.15
INV. E (8") 616.50
INV. W (8") 616.40
SANITARY SEWER (SS-03)
8" PVC SDR 21 WATERMAIN QUALITY PIPE & FITTINGS
32 LF @ 0.50%
BORE/AUGER UNDER IDOT STREET. PROVIDE CASING PIPE -EXTEND MIN. 10' PAST EDGE OF PVMT.
6"X6"X6" PRESSURE CONNECTION WITHIN 5' VAULT
10'X10' PVMT. PATCH
INV. AT DROP: 616.24
TIE-IN INV. (8"):611.37
INV. OF MAIN (24"): 610.37 VIF
WYE CONNECTION
5'X5' PVMT. PATCH
TIE-IN INV. (8"): 613.37
INV. OF MAIN (36"): 611.90 VIF
TRENCHES WITHIN IDOT PAVEMENT AREAS SHALL BE BACKFILLED WITH "FLOWABLE FILL" AND PATCHED IN ACCORDANCE WITH IDOT STANDARDS & SPECIFICATIONS
STORM SEWER (ST-01)
8" PVC SDR 26
23 LF @ 1.00%
BORE/AUGER UNDER IDOT STREET. PROVIDE CASING PIPE
RESTRICTOR MH W/BAFFLE (619.00)
60" MANHOLE (ST-02)
RIM 620.85 (E&W)
INV. E (12") 613.70 (TIDEFLEX)
BAFFLE ORIFICE (2") 613.60
INV. W (8") 613.60
(OPEN GRATE, SEE DETAIL ON SHEET 7)
NOTCH IN FOUNDATION AT DOORS IN COMMERCIAL UNIT
2 STORY COMMERCIAL AREA ±1,084.9 SQFT
F/F 621.78
3 STORY UNIT #1 ±2,221.17 SQFT
F/F 622.28
3 STORY UNIT #2 ±2,221.17 SQFT
F/F 622.28
3 STORY UNIT #3 ±2,221.17 SQFT
F/F 622.28
3 STORY UNIT #4 ±2,252.56 SQFT
F/F 622.28
INV. @ BLD. 616.64
INV. @ BLD. 616.72
INV. @ BLD. 616.89
INV. @ BLD. 617.11
INV. @ BLD. 618.11
REFUSE AREA WITHIN BUILDING
CONC. APRON
B.BOX
X-01
X-02
X-03
X-04
X-05
X-06
X-07
X-08
TIE-IN INV. 616.53
TIE-IN INV. 616.61
TIE-IN INV. 616.78
TIE-IN INV. 617.00
S-01
S-02
S-03
S-04
S-05
621.15 RIM
621.08 RIM
621.45 RIM
621.50 RIM
621.10 RIM
620.90 RIM
621.80 HYD
NEW FIRE HYDRANT
co INV.617.28
THICKENED EDGE SIDEWALK
TIE-IN INV. 616.90
WOOD FENCE AROUND PROPERTY LINE W/ GROUND COVER
6'-0" H. CEDAR BOARD ON BOARD FENCE
1'-0" WIDE LANDSCAPE AREA
STORM SEWER (ST-03)
12" HDPE ADS-N12 WT
6 LF @ 0.50%
15'X10' AUGER PIT
EXISTING RESIDENCE NO. 8159
EXISTING BUILDING NO. 8165
SANITARY SEWER (SS-02)
8" PVC SDR 21 WATERMAIN QUALITY PIPES AND FITTINGS
151 LF @ 0.50%
SANITARY MANHOLE (SS-01)
RIM 607.80
INV. W (8") 617.26
INV. N (6") 618.00
STORM SEWER (ST-05)
12" HDPE ADS-N12 WT
100 LF @ 0.57%
INV. @ BULK HEAD 616.49
36" CATCH BASIN (ST-06)
W/FLAT TOP
RIM 620.90
INV. W (12") 617.06
UNDERGROUND DETENTION SYSTEM
STORM SEWER (ST-04)
60" RCP CLASS IV
BULK HEAD ON BOTH ENDS
88 LF @ 0.20%
INV. DOWNSTREAM: 613.73
INV. UPSTREAM: 613.90
STORM MANHOLE
RIM 620.66
INV NW (36"RCP) 611.94
INV SSE (36"RCP) 612.11
INV SE (12"RCP) 612.42
INV SW (18"RCP) 614.88
CATCH BASIN
RIM 620.23
INV NW *UNABLE TO OPEN

DETENTION SUMMARY (LOCAL REQUIREMENTS – IN PIPES)
TOTAL DETENTION REQUIRED = 1,697 CU. FT.

VOLUME IN PIPES = 1,728 CU. FT.
TOTAL DETENTION PROVIDED = 1,728 CU. FT.

HWL = 619.00
OVERFLOW ELEVATION 619.00

(S-##) SANITARY SERVICE SCHEDULE

S-01
6" PVC SDR 26, WATERMAIN QUALITY PIPE
11 LF @1.00%

S-02
6" PVC SDR 26, WATERMAIN QUALITY PIPE
11 LF @1.00%

S-03
6" PVC SDR 26, WATERMAIN QUALITY PIPE
11 LF @1.00%

S-04
6" PVC SDR 26, WATERMAIN QUALITY PIPE
11 LF @1.00%

S-05
6" PVC SDR 26, WATERMAIN QUALITY PIPE
9 LF @1.22%

UTILITY CROSSING SCHEDULE

X-01
INV. OF SANITARY (8"): 616.60
TOP OF WATER (4"): 615.00

X-02
INV. OF SANITARY (8"): 616.68
TOP OF WATER (1-1/2"): 615.00

X-03
NV. OF SANITARY (8"): 616.85
TOP OF WATER (1-1/2"): 615.00

X-04
NV. OF SANITARY (8"): 617.07
TOP OF WATER (1-1/2"): 615.00

X-05
NV. OF SANITARY (8"): 618.07
TOP OF WATER (1-1/2"): 615.00

X-06
INVERT OF STORM (48"): 611.94
TOP OF WATER (6"): 610.44
CASING PIPE ON WATER

X-07
TOP OF SANITARY (24"): 612.37
INVERT OF WATER (6"): 614.84

X-08
INVERT OF SANITARY (8"): 616.37
TOP OF STORM SEWER (48"): 611.94

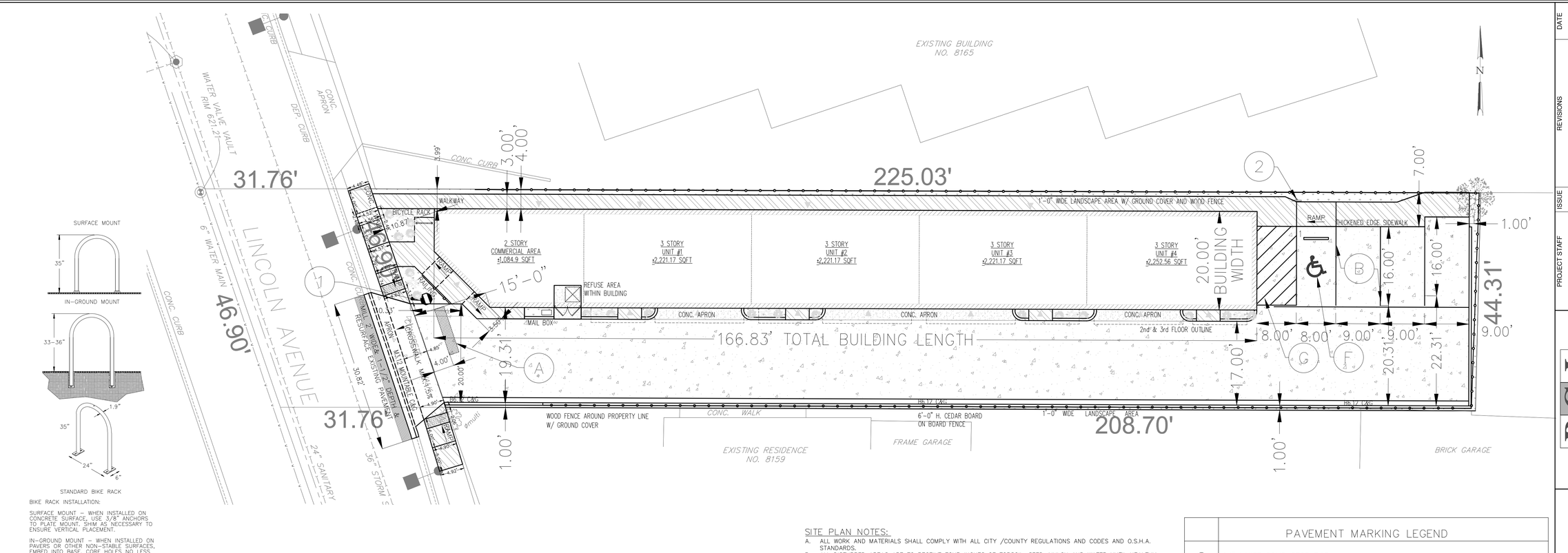
DATE	REVISIONS	ISSUE
09-08-2016	PRELIMINARY PLAN	A
10-18-2016	ISSUED FOR PERMIT	1
01-04-2017	REVISED PER VILLAGE COMMENTS	2
01-24-2017	REVISIONS PER MWRD/IDOT COMMENTS	3
03-27-2017	REVISIONS PER MWRD/IDOT COMMENTS	4
05-11-2017	REVISIONS PER MWRD/IEPA/IDOT COMMENTS	5
10-12-2017	REVISIONS PER MWRD COMMENTS-CHANGED DETENTION PIPE TO CONCRETE.	6

PROJECT STAFF
PROJECT MANAGER: B. BONO P.E.
ENGINEER: A. VEER P.E.
ENGINEER:
TECHNICIAN:

BCI
BONO CONSULTING, INC.
CIVIL ENGINEERS
1018 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH : (847) 823-3300
FAX: (847) 823-3303
bbono@bonoconsulting.com

PROPOSED UTILITY PLAN
OVERALL SITE
5 UNIT TOWNHOUSE DEVELOPMENT
8163 N. LINCOLN, SKOKIE, ILLINOIS

PROJECT NUMBER: 16189
START DATE: AUG 28, 2016
GRAPHIC SCALE
10 0 10
SCALE: 1"=10'-0
SHEET NUMBER



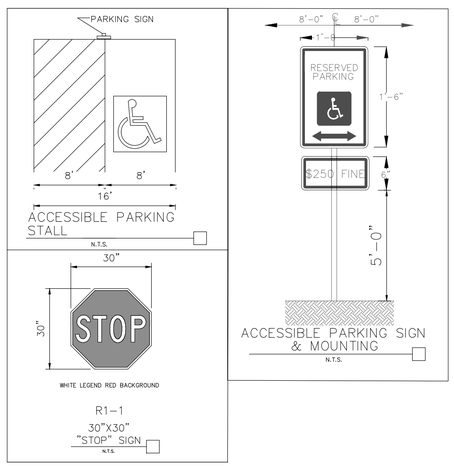
STANDARD BIKE RACK

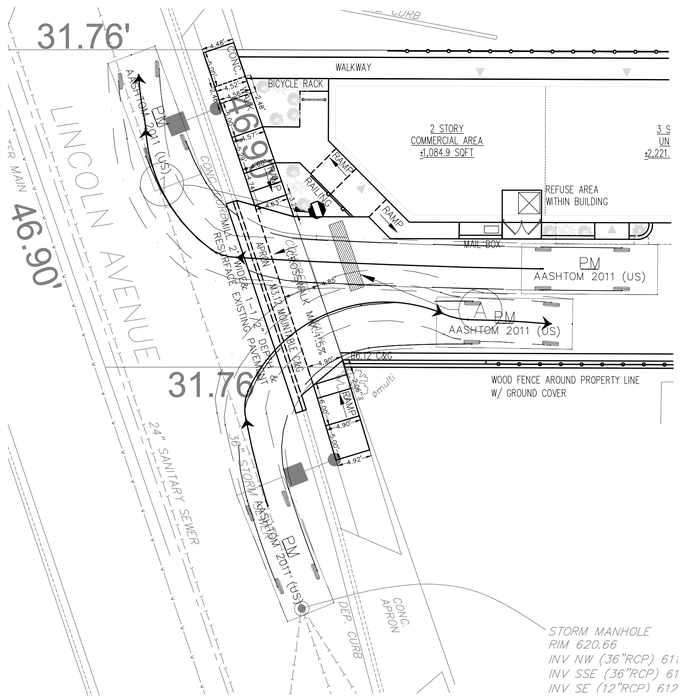
BIKE RACK INSTALLATION:

SURFACE MOUNT – WHEN INSTALLED ON CONCRETE SURFACE, USE 3/8" ANCHORS TO PLATE MOUNT. SHIM AS NECESSARY TO ENSURE VERTICAL PLACEMENT.

IN-GROUND MOUNT – WHEN INSTALLED ON PAVERS OR OTHER NON-STABLE SURFACES, EMBED INTO BASE. CORE HOLES NO LESS THAN 3" IN DIAMETER AND 10" DEEP.

BIKE RACK DETAILS





19' PASSENGER CAR TURNING RADIUS PLAN

SITE PLAN NOTES:

A. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL CITY /COUNTY REGULATIONS AND CODES AND O.S.H.A. STANDARDS.
B. ALL DISTURBED AREAS ARE TO RECEIVE FOUR INCHES OF TOPSOIL, SEED, MULCH AND WATER UNTIL HEALTHY STAND OF GRASS IS ESTABLISHED UNLESS OTHERWISE NOTED.
C. ALL CURBED RADII ARE TO BE 3' MEASURED TO FACE OF CURB UNLESS OTHERWISE NOTED. STRIPED RADII ARE TO BE 5' UNLESS OTHERWISE NOTED.
D. ALL DIMENSIONS ARE FACE OF CURB TO FACE OF CURB AND RADII ARE BACK OF CURB OR BUILDING FOUNDATION UNLESS OTHERWISE NOTED.
E. BUILDING DIMENSIONS AND ADJACENT PARKING AND 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.
F. ALL PROPOSED CURB AND GUTTER SHALL BE B6.12 UNLESS OTHERWISE NOTED.
G. EXISTING TOPOGRAPHY SHOWN REPRESENTS SITE CONDITION AS PREPARED BY BONO CONSULTING. CONTRACTOR SHALL FIELD CHECK EXISTING ELEVATIONS AND CONDITIONS PRIOR TO CONSTRUCTION AND NOTIFY ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING CONSTRUCTION.
H. 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.
I. EXISTING STRUCTURES WITHIN CONSTRUCTION LIMITS ARE TO BE REMOVED UNDER PROPOSED BUILDINGS AND ABANDONED ELSEWHERE AS NECESSARY. ALL COST SHALL BE INCLUDED IN BASE BID.
J. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELOCATIONS, (UNLESS OTHERWISE NOTED ON PLANS) INCLUDING BUT NOT LIMITED TO, ALL UTILITIES, STORM DRAINAGE, SIGNS, TRAFFIC SIGNALS AND POLES, ETC. AS REQUIRED. ALL WORK SHALL BE IN ACCORDANCE WITH GOVERNING AUTHORITIES REQUIREMENTS AND PROJECT SITEWORK SPECIFICATIONS AND SHALL BE APPROVED BY SUCH. ALL COST SHALL BE INCLUDED IN BASE BID.
K. SITE BOUNDARY, TOPOGRAPHY, UTILITY AND ROAD INFORMATION TAKEN FROM A SURVEY BY OTHERS.
L. IMPROVEMENTS ADJACENT TO BUILDING IF SHOWN SUCH AS TRUCK DOCK, RETAINING WALLS, SIDEWALKS, CURBING, CANOPIES, RAMPS, HANDICAP ACCESS, PLANTERS, DUMPSTERS AND TRANSFORMERS ETC. HAVE BEEN SHOWN FOR APPROXIMATE LOCATION ONLY. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF VESTIBULES, SLOPE PAVING, SIDEWALKS, EXIT PORCHES, TRUCK DOCKS, PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
M. THE CONTRACTOR SHALL ADJUST RIM ELEVATIONS OF ALL EXISTING STRUCTURES TO PROPOSED GRADES AS INDICATED ON PLANS.
N. CONTRACTOR TO VERIFY LOCATION, SIZES, AND ELEVATIONS OF ALL BUILDING SERVICE LOCATIONS WITH ARCHITECTURAL PLANS.
O. TOTAL LAND AREA IS 0.221+/- ACRES.
P. NO WETLANDS WERE PRESENT ON THIS SITE.
Q. THE SITE WORK FOR THIS PROJECT SHALL MEET OR EXCEED THE "SITE SPECIFIC SPECIFICATIONS."
R. MONUMENT AND/OR PYLON SIGNS SHALL BE CONSTRUCTED BY OWNER ASSIGNED CONTRACTOR.
S. ALL GENERAL CONTRACTOR WORK TO BE COMPLETED (EARTHWORK, FINAL UTILITIES, AND FINAL GRADING) BY THE MILESTONE DATE IN PROJECT DOCUMENTS. OUTLOT AREA TO BE KEPT FREE OF JOB TRAILERS AND STORAGE AFTER THE CONTRACT MILESTONE DATE FOR THE OUTLOT. PURCHASER OF OUTLOT TO PROVIDE PERMIT DOCUMENTS AND SWPPP REQUIRED BY STATE/LOCAL REQUIREMENTS FOR SPECIFIC OUTLOT.
T. ALL ROADWAY AND PARKING LOT IMPROVEMENTS 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.
U. 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.
V. CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE
W. ALL SIDEWALK CROSS-SLOPES SHALL BE 1% UNLESS OTHERWISE NOTED.

PAVEMENT MARKING LEGEND

(A)	24" WHITE SOLID STOP BAR
(B)	4" YELLOW SOLID LINE
(C)	8" SOLID WHITE LINE
(D)	LETTERS & SYMBOLS PAVEMENT MARKINGS
(E)	TRAFFIC FLOW DIRECTIONAL ARROWS
(F)	ACCESSIBLE PARKING SPACE PAVEMENT MARKINGS–SEE DETAIL
(G)	4" YELLOW DIAGONAL AT 45° SPACED 3' O.C.
(H)	4" SOLID WHITE LINE

SIGNAGE LEGEND

(1)	STOP SIGN (R1-1)
(2)	ACCESSIBLE PARKING SIGN (R7-8)
(3)	NO PARKING SIGN FIRE LANE (R8-31)
(4)	DO NOT ENTER (R5-1)
(5)	PEDESTRIAN CROSSING SIGN

PAVEMENT LEGEND

HEAVY DUTY PAVEMENT (NOT USED)
2" BITUMINOUS SURFACE COURSE, HOT-MIX ASPHALT, MIX D, N50
2-1/2" BITUMINOUS BINDER COURSE, HOT-MIX ASPHALT, IL-19, N50
12" AGGREGATE BASE COURSE CA-6, TYPE B

STANDARD DUTY PAVEMENT (NOT USED)
2" BITUMINOUS SURFACE COURSE, HOT-MIX ASPHALT, MIX D, N50
2" BITUMINOUS BINDER COURSE, HOT-MIX ASPHALT, IL-19, N50
8" AGGREGATE BASE COURSE CA-6, TYPE B

CONCRETE APRON/PAVEMENT
8" CONCRETE PAVEMENT (W/6X6 W/1.4 WWF, IF ALLOWED IN ROW)*
4" COMPACTED AGGREGATE BASE CA-6, TYPE B

CONCRETE PADS – TRASH CORAL & UTILITY PADS
8" CONCRETE PAVEMENT W/6X6 W/1.4 WWF*
4" COMPACTED AGGREGATE BASE CA-6, TYPE B

SIDEWALKS
5" PORTLAND CEMENT CONCRETE
4" COMPACTED AGGREGATE BASE COURSE, TYPE B

IDOT PAVEMENT RESURFACING
1-1/2" SURFACE COURSE

DETECTABLE WARNING AND DEPRESSED CURB
REPLACEABLE RED POLYMER COMPOSITE PLATES

*REFER TO CONCRETE JOINT DETAILS (IF ANY).

REVISIONS	ISSUE	DATE
PRELIMINARY PLAN	A	09-06-2016
ISSUED FOR PERMIT	1	10-19-2016
REVISED PER VILLAGE COMMENTS	2	01-04-2017
REVISIONS PER MWRDGOT COMMENTS	3	01-24-2017
REVISIONS PER MWRDGOT COMMENTS	4	03-27-2017
REVISIONS PER MWRDGOT COMMENTS	5	05-11-2017
REVISIONS PER MWRD COMMENTS DETENTION PIPE TO CONCRETE	6	10-12-2017

PROJECT STAFF
PROJECT MANAGER: B. BONO P.E.
ENGINEER: A. VEER P.E.
ENGINEER:
TECHNICIAN:

BCI
BONO CONSULTING, INC.
CIVIL ENGINEERS
1018 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH : (847) 823-3300
FAX: (847) 823-3303
bbono@bonoconsulting.com

SITE PLAN & GEOMETRIC PLAN
OVERALL SITE
5 UNIT TOWNHOUSE DEVELOPMENT
8163 N. LINCOLN, SKOKIE, ILLINOIS

PROJECT NUMBER: 16189
START DATE: AUG 28, 2016
GRAPHIC SCALE 30 0 30
SCALE: 1"=30'-0
SHEET NUMBER 5 OF 11

GENERAL CONSTRUCTION NOTES

1. The construction shall be under the general inspection of the Village engineer and the owner's engineer.
2. All work shall be in accordance with the applicable sections of the following specifications:
   a. Illinois Department of Transportation (I.D.O.T.) "Standard Specifications for Road and Bridge Construction" January 1, latest edition.
   b. "Standard Specifications for Water and Sewer Main Construction in Illinois" latest edition.
   c. "Illinois Recommended Standards for Sewage Works" as published by the I.E.P.A.
   d. "Manual on Uniform Traffic Control Devices" (M.U.T.C.D.) latest edition.
   e. The Subdivision and Development Codes and Standards of the local authority.
   f. "Procedures and Standards for Urban Soil Erosion and Sedimentation Control in Illinois" published by the Association of Illinois Soil and Water Conservation Districts.

   Where a contradiction occurs with any part of the standard specifications, the most stringent requirement shall take precedence, as determined by the engineer.

   The contract documents (Plans and Specifications/General Notes) shall supersede the standard specifications. If there is a conflict between the plans and specifications, the most stringent requirement shall take precedence, as determined by the engineer.

   The contractor shall have at least one copy of all applicable specifications as well as one copy of the contract documents (Plans and Specifications) available at the job site at all times that work is in progress.
3. Should any discrepancies or conflicts on the plans, quantities or specifications be discovered by the contractor, whether prior to awarding or after the award of the contract, the engineer's attention shall be called to the same before work is begun thereon and so that proper corrections can be made.
4. Contract Documents and Drawings:
   A. The engineer's drawings (The Plans) shall be included as part of the contract documents.
   B. The contractor is required to review the soils report for the site.
   C. All bidders shall carefully examine the drawings and specifications prepared for the work. They shall visit the site of the work and acquaint themselves with all local conditions, codes, and requirements affecting the contract. If awarded the contract, they shall not be allowed extra compensation by reason of any unforeseen difficulties or obstacles which the bidder could have discovered or reasonably anticipated prior to the bidding.
   D. Should it appear that the work covered by the contract documents is not sufficiently detailed or explained, an RFI form shall be submitted to the engineer for further drawings or explanations as may be necessary to clarify the point in question prior to the contract award. It is the intention of the contract documents to provide a job complete in every respect. The contractor is responsible for this result and to turn over the project in complete operating condition, irrespective of whether the contract documents cover every individual item in minute detail.
5. The Local Department of Public Works and Community Development shall be notified 24 hours in advance to schedule inspections for sidewalk, curb and gutter driveways, aprons, paving, grading, watermain, sewer main and utility services.
6. Work shall not take place without required traffic control devices and barricades in place per the M.U.T.C.D. Any deficiency of safety or traffic control devices shall be just cause to stop the project until such time as the deficiency is corrected.
7. Village streets shall not be closed without the written permission of the Palatine Department of Engineering and Community Development and then only after proper notification has been given to the Police and Fire Departments.
8. The contractor shall immediately remove mud, soil or debris deposited on public streets. Failure to keep streets clean shall be just-cause for issuance of a Stop Work Order or citation.
9. Signs located in the public right-of-way must not be removed or damaged. If a sign needs to be moved, notify the Public Works Department.
10. Construction materials shall not be stored within the Village Right-Of-Way.
11. The owner/contractor shall be responsible for obtaining all required Federal, State, County, I.E.P.A. permits.

    The contractor shall, at his own expense, obtain all other permits, licenses, etc., as may be required for the execution of this work, give all necessary notices, pay all fees required, post all bonds, and comply with all laws, ordinances, rules and regulations relating to the work and to the preservation of public health and safety.

    All required insurance and/or bonds shall be provided by the contractor as may be required by the permitting agency.

    The contractor shall meet all of the requirements of any permits as might be issued for this work by other agencies, and shall pay for at their sole expense any surety or bonds as may be required by the permitting agency.

12. The contractor is responsible for having a set of approved engineering plans with the latest revision date on the job site at all times during the construction period.
13. The contractor shall indemnify and save harmless the owner, Bono Consulting Inc., and their officers and employees; the Village and their officers, employees, agents, and engineers, and from and against all losses, claims, demands, payments, suits, actions, recoveries, and judgment of every nature and description brought or recovered against them, by reason of any act or omission of said contractor, their agents, subcontractors or employees, in the execution of the work or in the guarding of it.
14. The location of existing underground utilities, such as water mains, sewers, gas lines, etc., as shown on the plans, has been determined from the best available information and is given for the convenience of the Contractor. However, the Owner and Engineer do not assume responsibility in the event that during construction, utilities other than those shown may be encountered and that the actual location of those which are shown may be different from the location as shown on the plans. The contractor is to verify the location of all utilities prior to the start of work and is responsible for damage to same. The contractor shall call J.U.L.I.E. 1-800-892-0123 and the Village public works department for utility locates before excavating.
15. Existing utilities are shown on the plans according to information obtained from utility companies and surveys. The owner and engineer do not guarantee the accuracy or completeness of this information. The contractor shall make their own investigation to determine the existence, nature and location of all utility lines and appurtenances within the limits of the improvement. The contractor shall locate all utilities far enough in advance to avoid all conflicts in grade separation between existing utilities and proposed improvements. If the contractor encounters a conflict between the proposed improvement and existing utility that was not located in advance by the contractor, then the contractor shall at no cost to owner, relocate the proposed improvements and/or utility to avoid the conflict.

    The contractor will be required to cooperate with all utility companies involved in connection with the removal, temporary relocation, reconstruction or abandonment by these companies of any and all services or facilities owned or operated by them within the limit of this improvement.

    Before doing any work which will damage, disturb or leave unsupported or unprotected any utility lines or appurtenances encountered, the contractor shall notify the respective owner thereof, who will make all arrangements for relocating, adjusting, or otherwise maintaining or abandoning service on lines that fall within the limits of the proposed construction without cost to the contractor, including the removal of all cables, manhole covers and other appurtenances which the owner desires to salvage. After such arrangements have been made, the contractor will proceed with the work as directed by the engineer. All utility lines and appurtenances which are abandoned shall be removed and legally disposed of by the contractor.

    No extra compensation will be allowed by the contractor for any expense incurred by complying with these requirements or because of delays, inconvenience or interruptions in their work resulting from the failure of any utility company to remove, relocate, reconstruct or abandon their services. The responsibility for prompt and timely removal, relocation, reconstruction or abandonment of their facilities by all utility companies involved, and the coordination of their own work with that of these companies to the end that work on this improvement is not delayed because of the necessary changes in the existing utilities, public or private, shall rest upon the contractor.

16. The flow from any field tiles draining off-site properties shall be maintained. The contractor shall notify the engineer if any such field tiles are encountered and shall show them on a set of as-built plans.
17. All existing utilities or improvements, including walks, curbs, pavements and parkways damaged or removed during construction shall be promptly restored to their respective original condition.
18. All existing pavement or concrete to be removed shall be saw cut along the limits of the proposed removal. Payment for sawing shall be included in the cost of the removal of each item.
19. The contractor is to verify all critical elevations prior to commencing work and if there are any discrepancies, is to notify the engineer immediately. The contractor shall call to the attention of the engineer any errors or discrepancies which may be suspected in the lines and grades which are established by the surveyor, and shall not proceed with the work until any lines and grades which are to believed to be in error have been verified or corrected by the engineer.
20. No holes are to be left open in the pavement or the parkway over a holiday, weekend, or after 3 p.m. on the day preceding a holiday or weekend.
21. Any bracing, sheeting or special construction methods deemed necessary by the contractor in order to install the proposed improvements shall be considered incidental to the cost of the project. Any additional soils data needed to confirm the contractor's opinions of the subsoil conditions shall be done at the contractor's expense. The contractor shall obtain the owner's written authorization to access the site to conduct a supplemental soils investigation.
22. Whenever the performance of work is indicated on the plans, and no item is included in the contract for payment, the work shall be considered incidental to the contract and no additional compensation will be allowed.
23. All items shown to be removed, shall be legally disposed of off-site.
24. All work performed under this contract shall be guaranteed against all defects in materials and workmanship of whatever nature by the contractor and his surety for a minimum period of 12 months from the date of final acceptance of the work by the Village, other applicable governmental agencies, and the owner.
25. No work shall be performed on adjacent private property without the written permission of the property owner.
26. During construction the contractor and their subcontractors shall remove from the premises, rubbish, waste material and accumulations, and shall keep the premises clean. The contractor shall clean the premises to the satisfaction of the owner, engineer, and Village.
27. The contractor shall have appropriate equipment, including street sweepers and end loaders available on-site at all times when equipment or vehicles are using existing public or private pavement. The contractor shall immediately remove any dirt, mud, clay, sediment, concrete, gravel, sand, stones, plant matter, debris, refuse, garbage, etc. deposited on any street, sidewalk or alley by any equipment, vehicles or people associated with this project. The contractor is responsible for complying with all Village ordinances including any and all assessments of cost that may result. This work shall not be paid for separately, but shall be included in the cost of the work.
28. All trenching, shoring, and construction work performed shall be in accordance with O.S.H.A. Standards. The contractor shall at all times maintain proper dust control at the site and shall have a watering truck readily available during all working hours.
29. The contractor shall water the entire site whenever the site conditions become unhealthy due to blowing soil or dust. The site shall be watered as many times per day as necessary to maintain a healthy work site as determined by the owner or engineer. Water for non-emergency use shall not be obtained from any fire hydrant, unless the fire hydrant is metered in accordance with Village requirements. The cost to furnish dust control shall be incidental to the cost of construction.
30. The contractor must follow the requirements of the Village Specification for all pavement openings and repairs.
31. Tree removal permit is required for removal of all trees 10" diameter or greater.
32. An inspection of the top of foundation will be required prior to pouring.
33. A final inspection of grading will be required before placement of any sod.
34. All street openings shall be in accordance with IDOT standards for work within an IDOT R.O.W.
35. All retaining walls greater than 36" high need to be approved by a licensed structural engineer. Retaining wall shop drawings to be submitted by contractor for approval.
36. Construction staking shall be provided by the contractor and shall be included in the contract price. A licensed surveyor must stake all grading, utility and paving work.
37. Upon completion of the project, the contractor or engineer shall submit a sets of as-built engineering plan and a grading certificate. These documents shall be submitted within thirty (30) days of final approval to the Village. The price per this work shall be included in contractors fee.

IEPA NOTES:

Sewers crossing water mains shall be laid to meet the following specifications:

1. Horizontal Separation:
   A. Whenever possible, a water main must be laid at least ten feet horizontally from any existing or proposed drain or sewer line.
   B. Should local conditions exist which would prevent a lateral separation of ten feet, a water main may be laid closer than ten feet to a storm or sanitary sewer provided that the water main invert is at least eighteen inches above the crown of the sewer, and is either in a separate trench or in the same trench on an undisturbed earth shelf located to one side of the sewer.
   C. If it is impossible to obtain proper horizontal and vertical separation as described in 1 and 2 above, both the water main and sewer must be constructed of pipe material which would conform to water main standards and be pressure tested to assure water tightness before backfilling.
2. Vertical Separation:
   - Whenever water mains cross house sewers, storm drains or sanitary sewers, the water main shall be laid at such an elevation that the invert of the water main is eighteen inches above the crown of the drain or sewer. This vertical separation must be maintained for that portion of the water main located within ten feet horizontally of any sewer or drain crossed. This must be measured as the normal distance from the water main to the drain or sewer.
   - Where conditions exist that the minimum vertical separation set forth in 1 above cannot be maintained, or it is necessary for the water main to pass under a sewer or drain, one of the following two measures must be taken:

     •A. The water main shall be installed within a PVC carrier pipe and the carrier pipe shall extend on each side of the crossing until the normal distance from the water main to the sewer or drain line is at least ten (10) feet.
     •B. The involved sewer or drain shall be constructed of pipe material which would conform to water main standards until the normal distance from the water main to the sewer is at least ten (10) feet.
3. In making such crossings, center a length of water main pipe over the sewer to be crossed so that the joints will be equidistant from the sewer and as remote there from as possible. Where a water main must cross under a sewer, a vertical separation of eighteen inches between the invert of the sewer and the crown of the water main shall be maintained, along with means to support the larger sized sewer lines to prevent their settling and breaking the water main. The horizontal and vertical separation between water service lines and all sanitary sewers, storm sewers, or any drain should be the same as for water mains, as detailed above, except that when minimum horizontal and vertical separation cannot be maintained, water pipe as described under Vertical Separation above, may be used for sewer service lines.

EARTHWORK AND GRADING

1. All earthwork shall be done in accordance with the state of Illinois, "Standard Specifications for Road and Bridge Construction," latest edition and "Supplemental Specifications and Recurring Special Provisions," latest edition. Included in this work, but not necessarily limited to the following are: clearing, stripping and stockpiling of topsoil, mass grading and fine grading of the site and roadways, excavation of unsuitable materials and excavation of detention ponds, landscape mound construction, and miscellaneous topsoil respread and seeding.
2. Any earthwork summaries provided by the engineer are intended to be used as a guide for the contractor in determining the scope of the completed project. It is the responsibility of the contractor to determine all material quantities and appraise themselves of all site conditions. The contract price submitted by the contractor shall be considered as lump sum for the complete project. **No claims for extra work will be recognized unless ordered in writing by the owner.**
3. The initial establishment of erosion control procedures and the placement of erosion control fence, etc. shall be installed by the contractor prior to the start of mass grading.
4. All grading operations are to be supervised and inspected by the owner's engineer or their representative. All testing, inspection, and supervision of soil quality, unsuitable soil removal and its replacement, and other soils related operations shall be entirely the responsibility of the soils engineer. No undercut shall be performed or claims for extra work without authorization by the owner and documentation by the soils engineer.
5. Clearing shall consist of the removal and disposal of all obstructions such as trees, hedges, fences, walls, accumulations of rubbish of whatever nature, and all logs, shrubs, brush, grass, weeds, and other vegetation and stumps. These items shall be performed whenever they occur within the street right of ways, and within the limits of construction. Trees to be saved shall be identified by the Engineer on the construction plans. All trees, except those designated to be saved, and all stumps shall be cut and legally disposed of. Trees, stumps, and hedges within the limits of construction shall be removed completely. Trees designated to be saved as indicated on the plans, or as directed by the engineer, shall be protected in accordance with the procedures outlined in Article 201.05 of the "Standard Specifications for Road and Bridge Construction."
6. Strip topsoil down to firm subbase. stockpile quantity necessary for landscaping, and remove other materials from the site.

7. Excavation shall consist of the excavation, removal, and satisfactorily disposal or placement and compaction of all materials taken from within the site for the construction of embankments, subgrade, subbase, shoulders, intersections, ditches, waterways, entrances, approaches and incidental work, and the removal and satisfactory disposal of unstable and unsuitable materials and their replacement with satisfactory materials where required.
8. After stripping and excavating to the proposed subgrade level, as required, the building and parking areas should be proof-rolled with a loaded, tandem-axle dump truck or similar rubber tired vehicle, loaded with at least 9 tons per axle. Proof-rolling aids in providing a firm base for compaction of fills, and help to delineate soft, loose, or disturbed areas that may exist below subgrade level. Proof-rolling is especially important to help evaluate the surficial stability of existing fill soils that may be left in place below floor slabs and pavements. Soils which are observed to rut or deflect excessively (more than 1 inch) under the moving load should either be scarified and re-compacted with a smooth drum vibratory roller for granular soils, a sheeps foot roller for cohesive soils, or undercut and replaced with properly compacted and documented structural fill. The proof-rolling and undercutting activities should be observed and documented by a representative of the geotechnical engineer and should be performed during a period of dry weather. In addition to proof-rolling, the subgrade soils should be scarified and compacted to at least 90 percent of the Modified Proctor maximum dry density ASTM D 698 for a depth of at least 8 inches below the surface.
9. Where encountered, loose sands and asphalt grindings should be re-compacted with a vibratory roller. Clay subgrade soils can be easily disturbed by construction activities and are sensitive to moisture. Therefore, extra care should be used to avoid disturbing these soils during construction activities. If the soils become unstable during construction, or if near surface soft subgrade soils are encountered, it is recommended that coarse aggregate be placed on the subgrade until a stable base for compaction of fill is achieved. Typically, 12 to 24 inches of course aggregate are required, depending in the consistency of the subgrade. the course aggregate should consists of clean, crushed stone gravel between 1/4 and 3 inches in size. The course aggregate should be spread in a max. of 12-inch layers and consolidated with compaction equipment until it is "locked" in place.
10. Topsoil excavation shall consist of the removal and stockpiling, or placing on fill slopes or placing in mounds, of the uppermost layers of organic soil. Topsoil shall be stockpiled on the areas as shown on the plans or as directed by the engineer.
11. Topsoil respread shall consist of placing a minimum of a four (4) inch layer of topsoil over the unpaved areas within the construction limits.
12. 4" topsoil & sod shall be placed on all disturbed areas within the right of way.
13. Refer to the landscape plans for additional information on ground cover & planting requirements.
14. Embankment shall be placed in accordance with Section 205 of the "Standard Specifications for Road and Bridge Construction." All embankments located within structural fill areas shall be constructed to a minimum 95% of the modified proctor density (ASTM D1557). Embankments located in non-structural fill areas shall be constructed to a minimum of 90% of the modified proctor density (ASTM D1557).
15. Completed grading (finished fine grade) for all proposed improvements shall be within a tolerance of plus or minus one-tenth (0.1) feet of design subgrade elevations.
16. The subgrade for the proposed streets and pavement areas shall be proof-rolled by the contractor in the presence of the Village engineer and soils engineer. Any unstable areas encountered shall be removed and replaced as directed by the Village engineer and soils engineer. Any unstable areas shall be documented by the soils engineer.
17. It shall be the responsibility of the contractor to remove from the site any and all materials and debris which results from their construction operations at no additional expense to the owner.
18. When in the opinion of the soils engineer, unsuitable soil conditions are encountered within utility trenches which require the removal of unsuitable materials below the depth of the bedding specified, the contractor shall obtain approval by the owner and the owner's engineer prior to removing the unsuitable soils and replace the material with granular compacted bedding material as directed by the soils engineer and the Village. The depth of the removal and replacement shall be documented by the owner's engineer and witnessed by the contractor.

    This work, when approved by the owner and owner's engineer, will be measured and paid for at the contract unit price per cubic yard in place for unsuitable soil which price shall include the removal and off-site disposal of unsuitable soil, the additional bedding material, and all labor, materials and equipment required to perform the work as specified.
19. The contractor shall be responsible for hiring and scheduling a qualified testing firm for all soil testing including CCDD testing.This shall be included in the cost of work.
20. Contractor to install salt-tolerant grass in areas shown to be used for snow stockpiles.
21. Pavement areas to be compacted to 95% mod. proctor and 90% mod. proctor for non-pavement areas.

MWRD General Notes

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 SKOKIE 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).
2. THE VILLAGE OF SKOKIE 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 ________ 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-3035	ASTM D-3261,F-2620 (HEAT FUSION) 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.
12. 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.
13. ALL FLOOD PROTECTION AREAS AND VOLUME CONTROL FACILITIES SHALL, AT A MINIMUM, BE PROTECTED WITH A DOUBLE-ROW OF SILT FENCE (OR EQUIVALENT).
14. VOLUME CONTROL FACILITIES SHALL NOT BE CONSTRUCTED UNTIL ALL OF THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.
15. 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.
16. EARTHEN EMBANKMENT SIDE SLOPES SHALL BE STABILIZED WITH APPROPRIATE EROSION CONTROL BLANKET.
17. STORM SEWERS THAT ARE OR WILL BE FUNCTIONING DURING CONSTRUCTION SHALL BE PROTECTED BY APPROPRIATE SEDIMENT CONTROL MEASURES.
18. 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.
19. 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.
20. 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.
21. ALL PERMANENT EROSION CONTROL PRACTICES SHALL BE INITIATED WITHIN SEVEN (7) DAYS FOLLOWING THE COMPLETION OF SOIL DISTURBING ACTIVITIES.
22. 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.
23. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN THIRTY (30) DAYS AFTER PERMANENT SITE STABILIZATION.
24. 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.

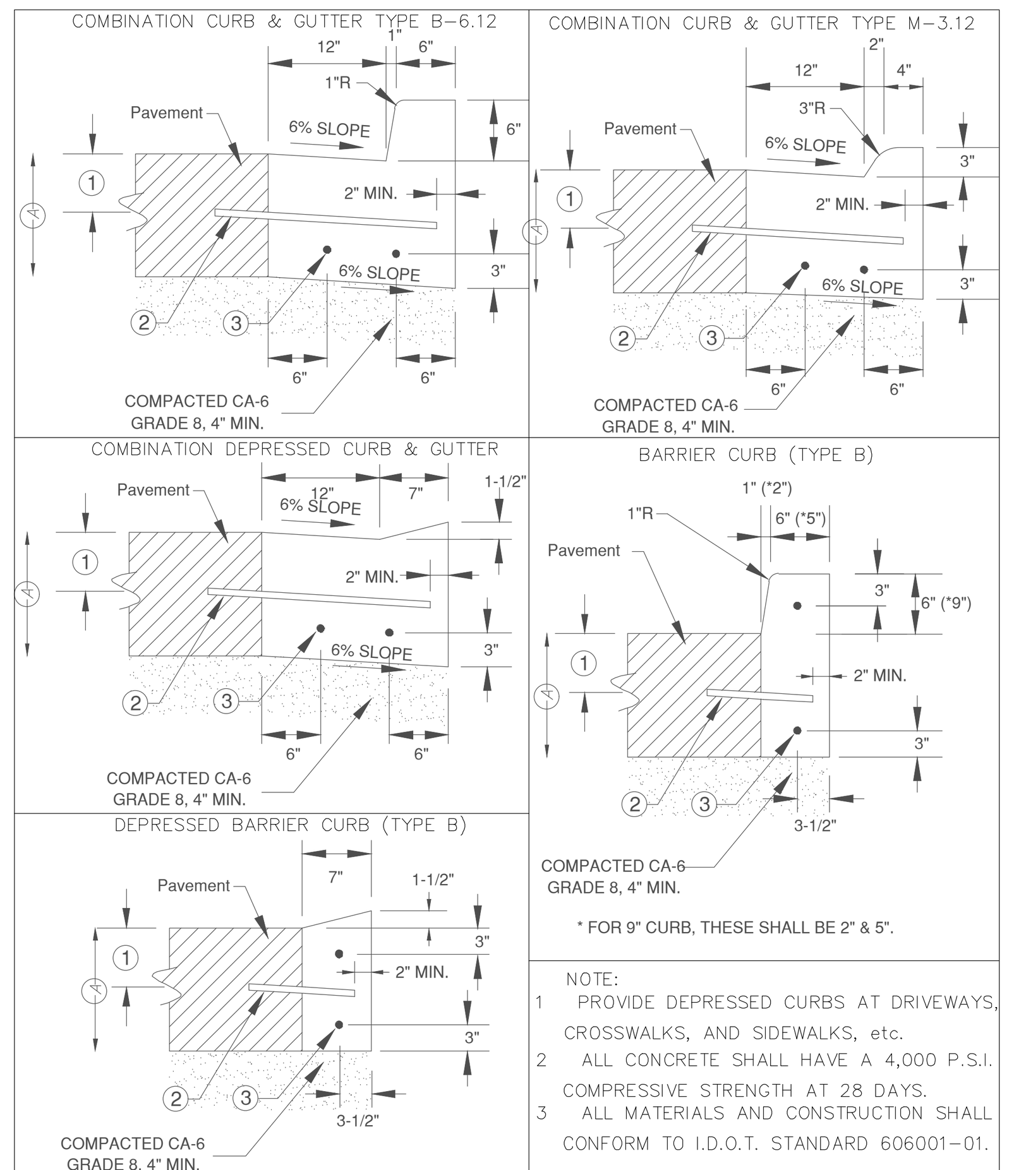
PROJECT STAFF		ISSUE	REVISIONS	DATE
PROJECT MANAGER:	B. BONO P.E.	A	PRELIMINARY PLAN	09-08-2016
ENGINEER:	A. VEER P.E.	1	ISSUED FOR PERMIT	10-18-2016
ENGINEER:		2	REVISED PER VILLAGE COMMENTS	01-04-2017
TECHNICIAN:		3	REVISIONS PER MWRD/IDOT COMMENTS	01-24-2017
		4	REVISIONS PER MWRD/IDOT COMMENTS	03-27-2017
		5	REVISIONS PER MWRD/IEPA/IDOT COMMENTS	05-11-2017
		6	REVISIONS PER MWRD COMMENTS-CHANGED DETENTION PIPE TO CONCRETE.	10-12-2017

BCI
BONO CONSULTING, INC.
CIVIL ENGINEERS
1018 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH : (847) 823-3300
FAX: (847) 823-3303
bbono@bonoconsulting.com

CONSTRUCTION NOTES

5 UNIT TOWNHOUSE DEVELOPMENT
8163 N. LINCOLN, SKOKIE, ILLINOIS

PROJECT NUMBER: 16189
START DATE: AUG 28, 2016
GRAPHIC SCALE
0
SCALE: NTS

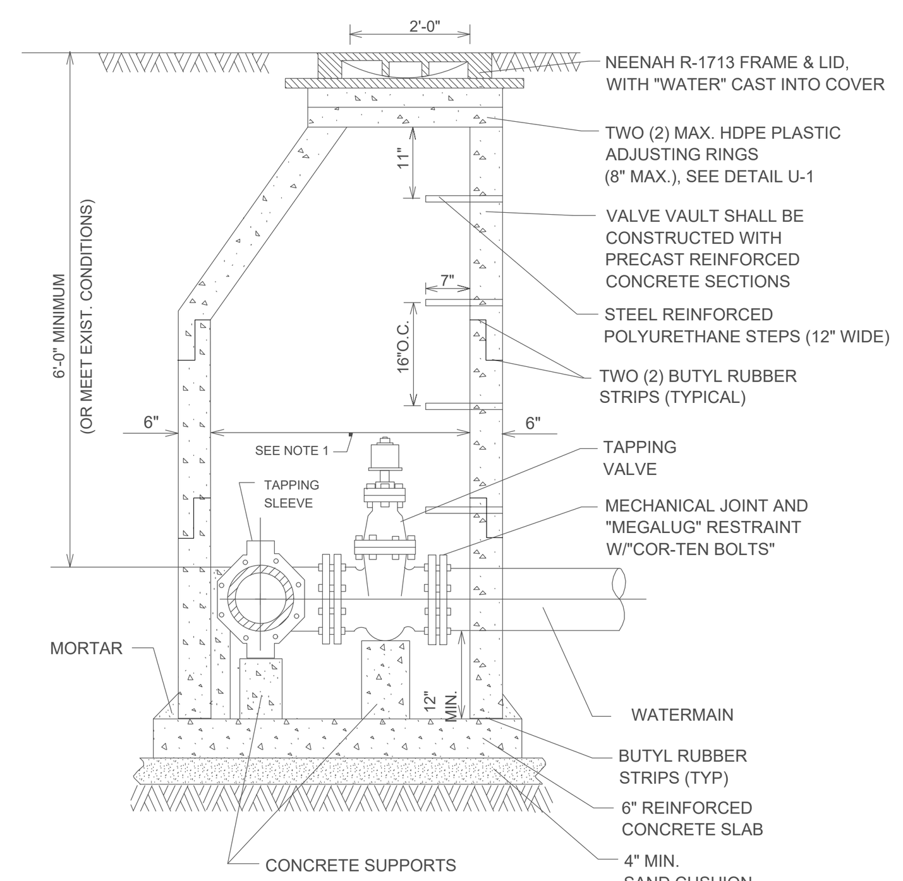


NOTE:
1 PROVIDE DEPRESSED CURBS AT DRIVEWAYS, CROSSWALKS, AND SIDEWALKS, etc.
2 ALL CONCRETE SHALL HAVE A 4,000 P.S.I. COMPRESSIVE STRENGTH AT 28 DAYS.
3 ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO I.D.O.T. STANDARD 606001-01.

Ⓐ PAVEMENT DEPTH or 9" MIN.
① TO BE CENTERED OR SET AS REQUIRED IN FIELD.
② 1/2" DIA. STEEL TIE BAR AT 2'-6" CENTERED WHEN PAVEMENT IS CONCRETE. OMIT WHEN ADJACENT PAVEMENT IS FLEXIBLE.
③ 5/8" DIA. STEEL REBAR CONTINUOUS (TYPICAL).

CURB & GUTTER DETAIL

U-18



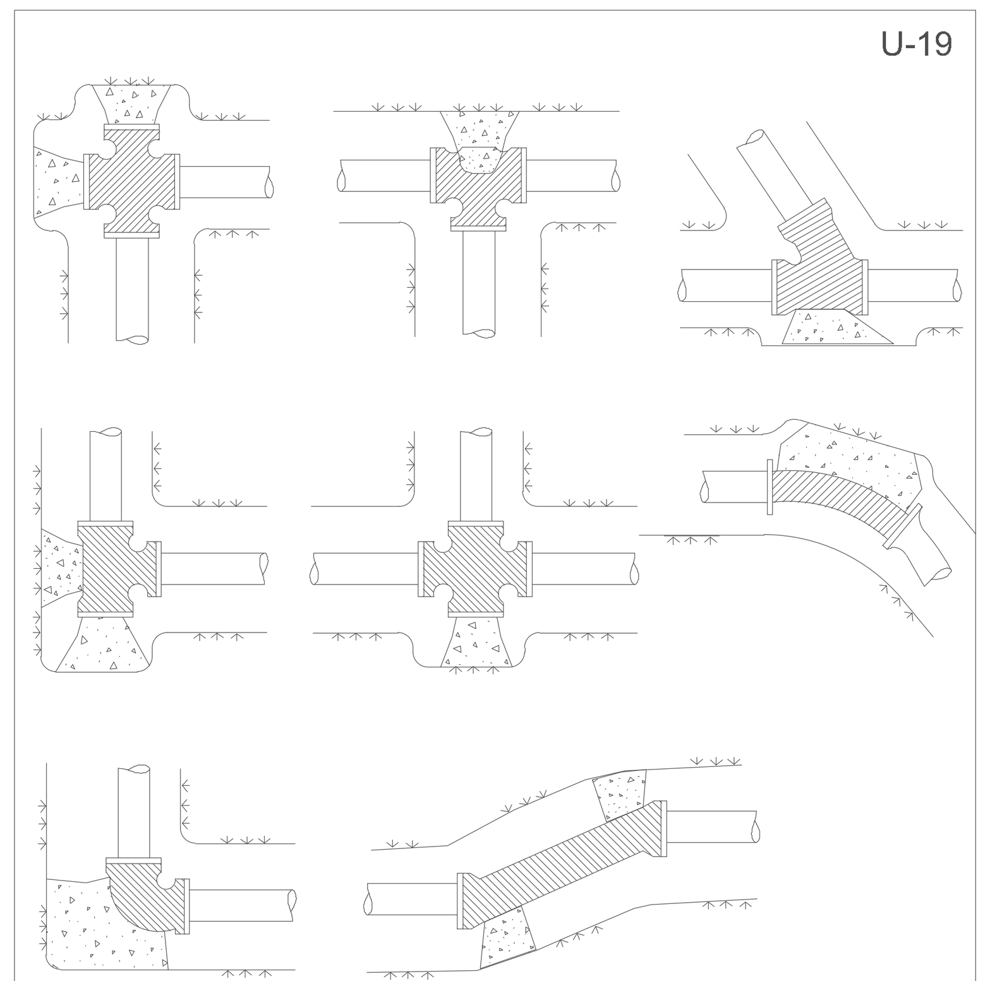
NOTES:
1. 60" (MIN) INSIDE DIA. FOR ALL PRESSURE CONNECTION VAULTS.
2. BACKFILL MATERIAL SHALL BE IDOT CA 7 STONE.
3. a) MECHANICAL JOINT BOLTS & NUTS SHALL BE COMPOSED OF CORE-TEN.
   b) ALL OTHER HEXAGONAL BOLTS & NUTS SHALL BE COMPOSED OF STAINLESS STEEL.
4. USE ECCENTRIC CONE FOR PRESSURE CONNECTIONS UP TO 12" DIA. USE CONCENTRIC CONES FOR PRESSURE CONNECTIONS 12" DIA. AND LARGER.
5. VALVE VAULT MUST CONFORM TO ASTM C-478.
6. ALL SECTIONS TO BE TONGUE AND GROOVED.
7. NON-PRECAST OPENINGS SHALL BE CORED, RUBBER BOOTED, AND MORTARED.*
8. TRACE WIRE SHALL BE USED ON ALL PIPE INSTALLATIONS, REGARDLESS OF PIPE MATERIAL.
* SEE PIPE CONNECTIONS TO STRUCTURE DETAIL U-5.

NOT TO SCALE

PRESSURE CONNECTION DETAIL

REVISED:01-01-16

U-19



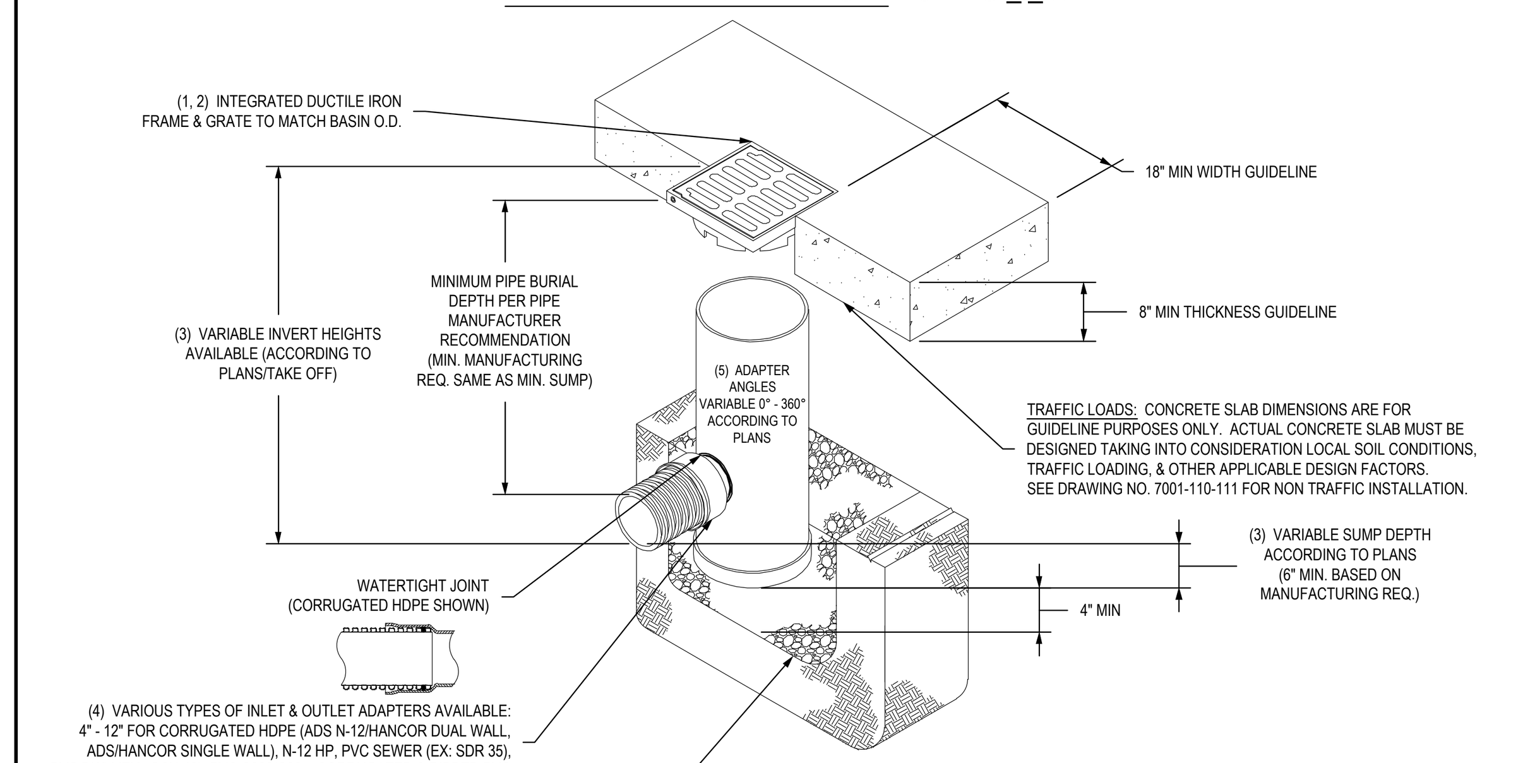
NOTE:
1. ALL BENDS OF 10 AND LARGER SHALL BE BLOCKED WITH AT LEAST 10" THICK POURED IN PLACE CONCRETE BLOCKS AGAINST UNDISTURBED VERTICAL EARTH FACE.
2. ALL CONCRETE TO BE MIN. 3,000 PSI.
3. IN ADDITION TO THE ABOVE THRUST BLOCKING: ALL MECHANICAL JOINTS, (BENDS OVER 10, TEES, CROSSES, VALVES AND FIRE HYDRANTS) SHALL HAVE A "MEGALUG" RESTRAINT, OR AS APPROVED BY VILLAGE ENGINEERING. BOLTS SHALL BE "COR-TEN".

NOT TO SCALE

THRUST BLOCK DETAIL

REVISED:01-01-16

NYLOPLAST 12" DRAIN BASIN: 2812AG _ _ X



GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
PEDESTRIAN	MEETS H-10	1299CGP	7001-110-202
STANDARD	MEETS H-20	1299CGS	7001-110-203
SOLID COVER	MEETS H-20	1299CGC	7001-110-204
PEDESTRIAN BRONZE	N/A	1299CGPB	7001-110-205
DOME	N/A	1299CGD	7001-110-206
DROP IN GRATE	LIGHT DUTY	1201DI	7001-110-021

1 - GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05, WITH THE EXCEPTION OF THE BRONZE GRATE.
2 - FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER.
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.

THIS PRINT DISCLOSES SUBJECT MATTER IN WHICH NYLOPLAST HAS PROPRIETARY RIGHTS. THE RECEIPT OR POSSESSION OF THIS PRINT DOES NOT CONFER, TRANSFER, OR LICENSE THE USE OF THE DESIGN OR TECHNICAL INFORMATION SHOWN HEREIN REPRODUCTION OF THIS PRINT OR ANY INFORMATION CONTAINED HEREIN, OR MANUFACTURE OF ANY ARTICLE HEREFROM, FOR THE DISCLOSURE TO OTHERS IS FORBIDDEN, EXCEPT BY SPECIFIC WRITTEN PERMISSION FROM NYLOPLAST. ©2013 NYLOPLAST

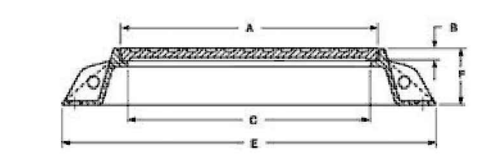
DRAWN BY EBC	MATERIAL	Nyloplast 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 03-29-06		
REVISED BY NMH	PROJECT NO./NAME	TITLE 12 IN DRAIN BASIN QUICK SPEC INSTALLATION DETAIL
DATE 03-11-16		
DWG SIZE A	SCALE 1:20 SHEET 1 OF 1	DWG NO. 7001-110-189 REV E

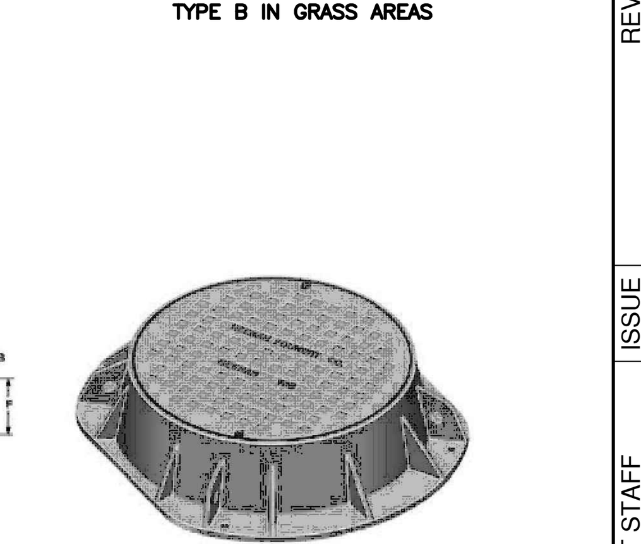
TYPE C IN PAVEMENT AREAS

TYPE B IN GRASS AREAS

R-1740 Series
Manhole Frame, Solid Lid

Heavy Duty





Illustrating R-1740-B

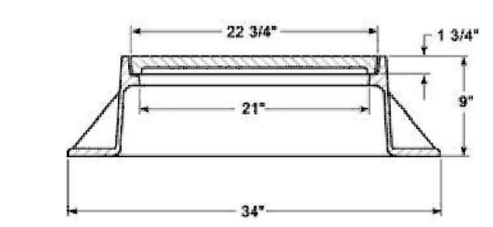
Dimensions in inches

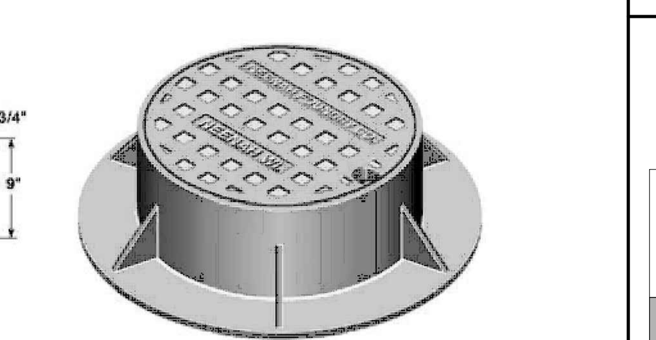
Catalog No.	A	B	C	E	F	Anchor Bolt Circle *	Grate Alt.
R-1740-B	32	1 1/2	30	46	7	43	R-2580-A
R-1740-D	38	1 1/2	36	49	10	46	R-2580-C

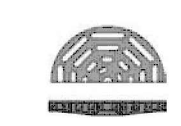
* Four 1" diameter anchor holes.

R-1713
Manhole Frame, Solid Lid

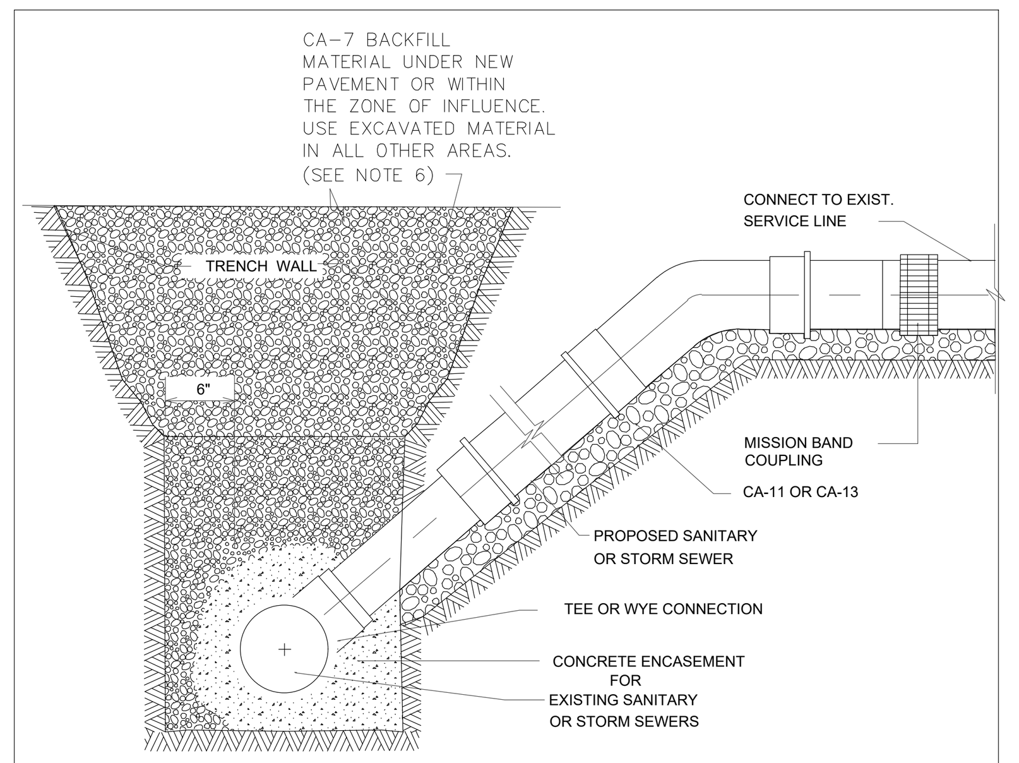
Heavy Duty







Available Grate: **R-2504**

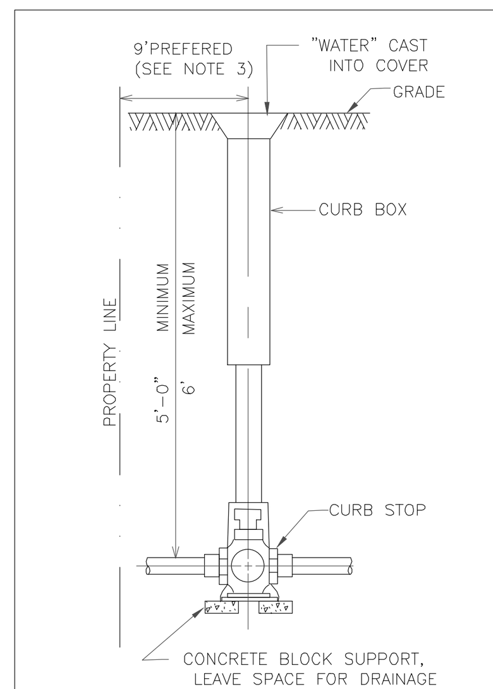


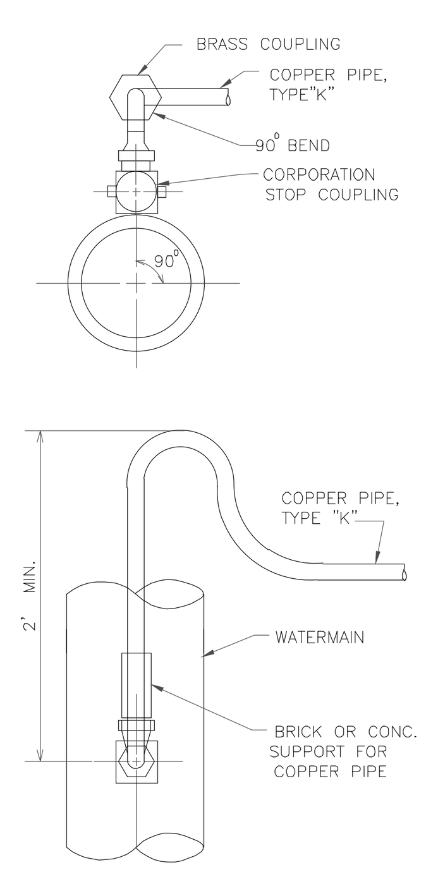
NOTES:
1. FOR PROPOSED STORM SEWER SERVICE ≤ 6", CORE THE PIPE AND USE A BOOT CONNECTION.
2. FOR PROPOSED STORM SEWER SERVICE ≥ 8", A MANHOLE MUST BE INSTALLED.
3. FOR CONNECTING SANITARY SEWER SERVICE TO AN EXISTING SANITARY SEWER < 12", REMOVE A SECTION OF PIPE AND INSTALL A TEE OR WYE CONNECTION.
4. FOR CONNECTING SANITARY SEWER SERVICE TO AN EXISTING SANITARY SEWER > 15", CIRCULAR SAW-CUT AND USE A HUB WYE OR TEE SADDLE CONNECTION.
5. FOR PROPOSED STORM OR SANITARY SEWER SERVICES, ENCASE ALL CONNECTIONS IN LOW STRENGTH CONCRETE TO PREVENT THE FITTINGS FROM ROTATING.
6. FOR TRENCHES WITHIN AN EXISTING PAVED SURFACE AREA, FLOWABLE FILL BACKFILL MEETING IDOT'S SPECIFICATIONS FOR CONTROLLED LOW STRENGTH MATERIAL (CLSM) MIX 1 SHALL BE USED.

NOT TO SCALE

SANITARY SERVICE DETAIL

REVISED 10-10-03





A. CURB BOX: FOR 1",1 1/2 ",2" WATER SERVICES
1. -MUELLER H-10302 WITH 1 1/2 " I.D. UPPER SECTION AND A 2" MINNEAPOLIS TAPPED BASE.
2. -FORD EM2-60-67.
3. -AY McDONALD 5623 EXTENDABLE TO 6 FEET.

B. CURB STOP:
1. -MUELLER B-25154 (1",1 1/2 ",2").
2. -FORD 1" IS B22-444M; *CURB STOP WILL REQUIRE 2"x1 1/2 " BUSHING
   1 1/2 " IS B22-666M
   2" IS B22-777M.
3. -AY McDONALD 6104 (1",1 1/2 ",2"). *1" CURB STOP WILL REQUIRE 2"x1 1/2 " BUSHING.

C. CORPORATION STOP:
1. -MUELLER B25000 PLUS H-15068 QUARTER BEND FLARED COUPLING.
2. -FORD 1" IS FB600-4 PLUS L02 SWIVEL QUARTER BEND FLARED COUPLING
   1 1/2 " IS FB600-6 PLUS L02 SWIVEL QUARTER BEND FLARED COUPLING
   2" IS FB600-7 PLUS L02 SWIVEL QUARTER BEND FLARED COUPLING.
3. -AY McDONALD 4701B PLUS 4776S SWIVEL QUARTER BEND FLARED COUPLING.

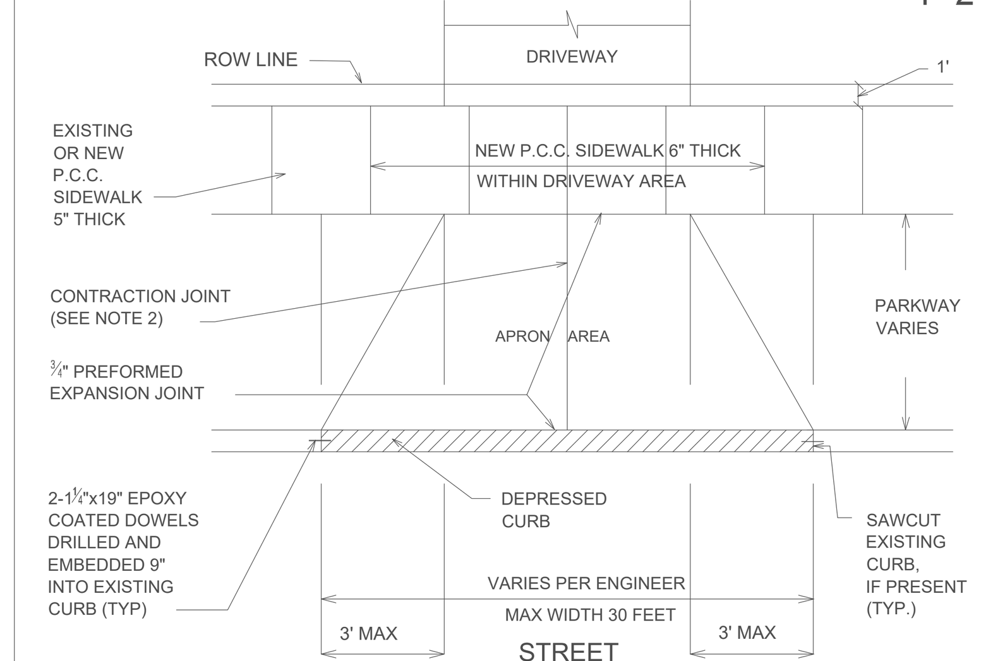
D. WHERE 1 1/2 " TO 2" TAPS ARE REQUIRED, A DOUBLE-STRAP BRONZE SADDLE MUST BE USED FOR THE TAP. MUELLER H16126-H16137, FORD 202B-540 OR A.Y. McDONALD No 3825 TAP SIZE.

NOTE:
1. PIPE SIZE CAN VARY, BUT 1" MINIMUM. OTHER APPURTENANCES SHALL REFLECT SAME.
2. COPPER PIPE SHALL BE ONE PIECE BETWEEN TAP AND CURB BOX.
3. CURB BOX SHALL BE 3' FROM PROPERTY LINE WITHIN CUL-DE-SACS.
4. MINIMUM OF 3' BETWEEN TAPS AND 3' TO NEAREST JOINT.

REVISED 11-05-03
NOT TO SCALE

COPPER WATER SERVICE CONNECTION DETAILS

P-2

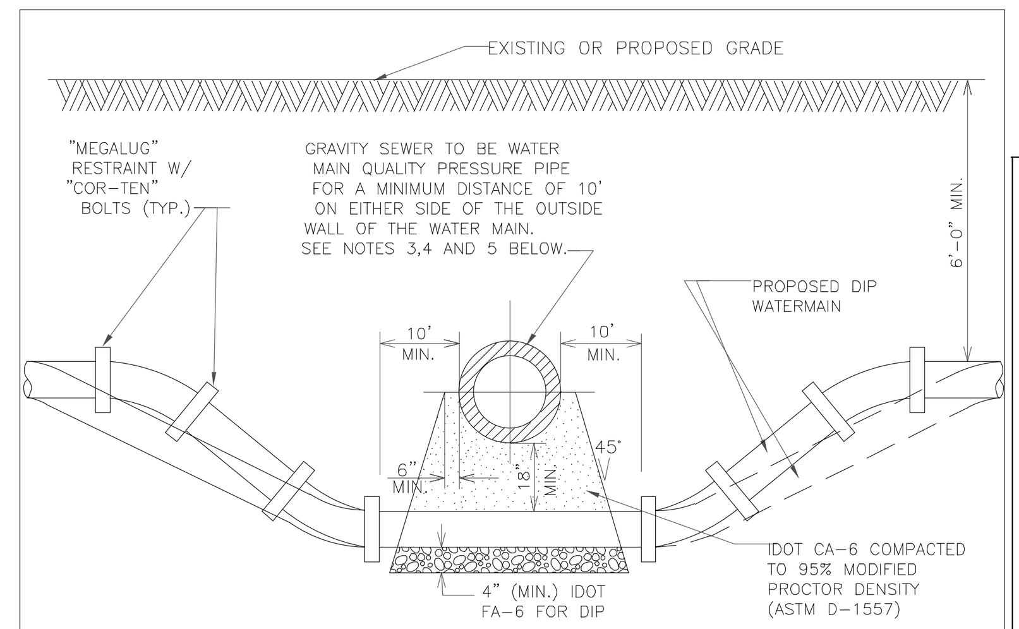


NOTES:
1. FOR P.C.C. DRIVEWAY OVER AN UNDERGROUND UTILITY TRENCH, PLACE 6' X 6' - W2.9XW2.9 WELD AND WIRE FABRIC AT MID-DEPTH OF THE CONCRETE.
2. FOR CONCRETE APRON WIDER THAN 16', A CONTRACTION JOINT SHALL BE LOCATED ALONG THE CENTERLINE.
3. P.C.C. CONCRETE DRIVEWAYS:
   APRON- 6" (MIN) PORTLAND CEMENT CONCRETE AND 4" (MIN) IDOT CA 6 CRUSHED STONE
   DRIVEWAY- 4" (MIN) PORTLAND CEMENT CONCRETE AND 4" (MIN) IDOT CA 6 CRUSHED STONE
4. BITUMINOUS DRIVEWAYS:
   APRON- 3" (MIN) BITUMINOUS CONCRETE SURFACE COURSE AND 6" (MIN) IDOT CA 6 CRUSHED STONE
   DRIVEWAY- 3" (MIN) BITUMINOUS CONCRETE SURFACE COURSE AND 4" (MIN) IDOT CA 6 CRUSHED STONE
5. BRICK PAVERS AND OTHER ARCHITECTURAL PAVING MATERIALS ARE NOT ALLOWED IN A DRIVEWAY APRON AREA WITHOUT A BUILDING PERMIT AND WRITTEN PERMISSION - INCLUDING A HOLD HARMLESS AGREEMENT (APPROVED BY VILLAGE ENGINEERING).
6. MAINTAIN FULL SIDEWALK WIDTH THROUGH DRIVEWAYS UNLESS DIRECTED OTHERWISE BY VILLAGE ENGINEERING. CURBING SHALL NOT RUN THROUGH SIDEWALK AREAS IN DRIVEWAYS.

NOT TO SCALE

RESIDENTIAL DRIVEWAY DETAIL

REVISED:02-28-07

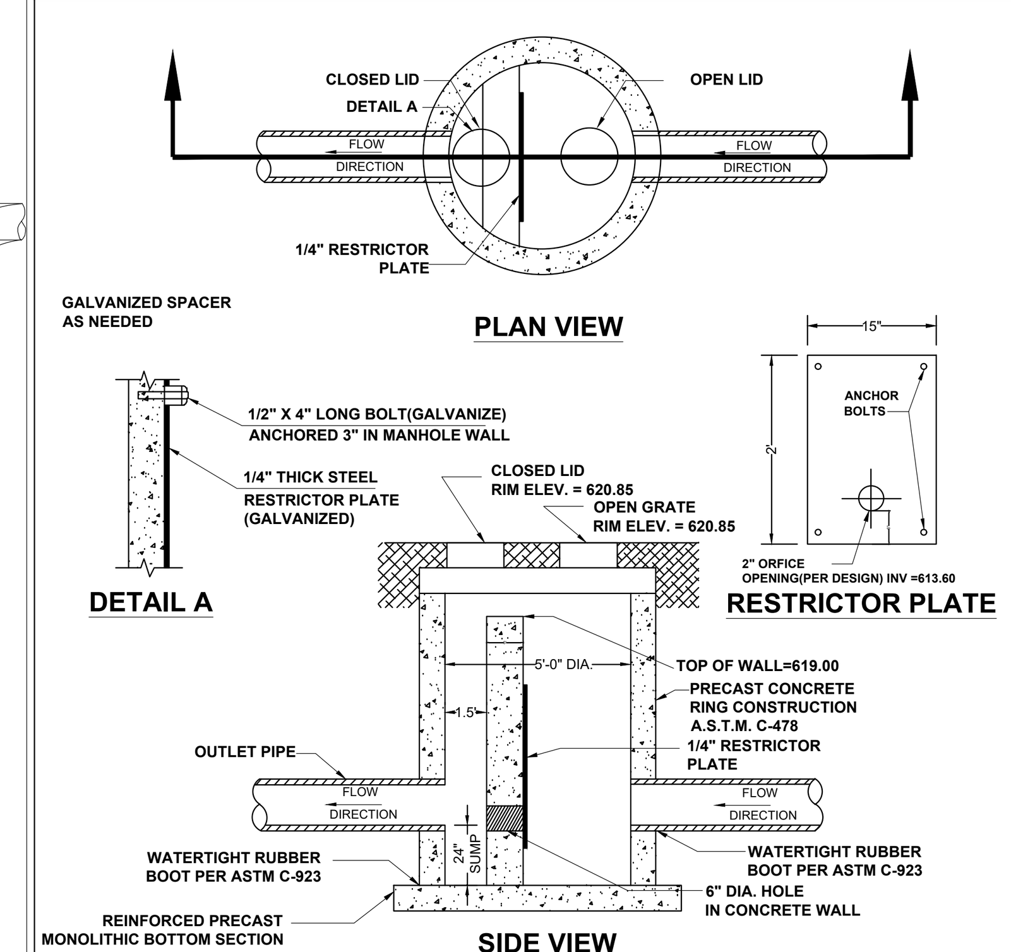


NOTES:
1. HORIZONTAL AND VERTICAL SEPARATION BETWEEN WATERMAINS AND SEWERS SHALL COMPLY WITH APPLICABLE SECTIONS OF THE VILLAGE OF GLENVIEW ENGINEERING GUIDE OR IEPA REQUIREMENTS, WHICHEVER IS MORE STRINGENT.
2. CONTRACTOR MAY BEND WATER MAIN PIPE UNIFORMLY UNDER SEWERS WITHOUT USING FITTINGS, PROVIDED 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 WATERMAIN DEPTH ARE REQUIRED, OR RETAINER GLANDS MAY BE USED IN LIEU OF STRAPPING. RETAINER GLANDS TO BE CLOW No. F-1058 OR APPROVED EQUAL.
3. ALL SANITARY SEWER (INCLUDING SERVICE) CROSSINGS WHERE THE WATER MAINS OR WATER SERVICES ARE LESS THAN 18" VERTICALLY ABOVE THE SEWER SHALL BE POLYVINYL CHLORIDE PRESSURE PIPE (SDR 26-160 PSI) AND SHALL CONFORM WITH THE LATEST REVISION OF ASTM D- 2241. JOINTS SHALL CONFORM TO ASTM D-3139 AND ELASTOMERIC GASKETS SHALL CONFORM TO ASTM F-477. THE SAME PIPE AND JOINT MATERIALS SHALL BE USED WHENEVER WATER MAIN CROSSES BELOW THE SEWER.
4. ALL STORM SEWER (INCLUDING SERVICE) CROSSINGS WHERE THE WATER MAINS ARE LESS THAN 18" VERTICALLY ABOVE THE SEWER SHALL BE REINFORCED CONCRETE PIPE, ASTM C-361, CLASS D-25,WITH BELL AND SPIGOT JOINTS AND RUBBER GASKETS, OR PVC SDR 26 AS SPECIFIED IN NOTE 3 ABOVE. THE SAME PIPE AND JOINT MATERIAL SHALL BE USED WHENEVER WATER MAIN CROSSES BELOW THE SEWER.
5. FOR NEW SEWER INSTALLATIONS CROSSING OVER WATER MAINS, THE ENTIRE RUN OF NEW SEWER SHALL BE WATER MAIN QUALITY PIPE, EXTENDING FROM STRUCTURE TO STRUCTURE ON EACH SIDE OF THE CROSSING.

NOT TO SCALE

WATER MAIN CROSSING DETAIL

REVISED 10-10-03

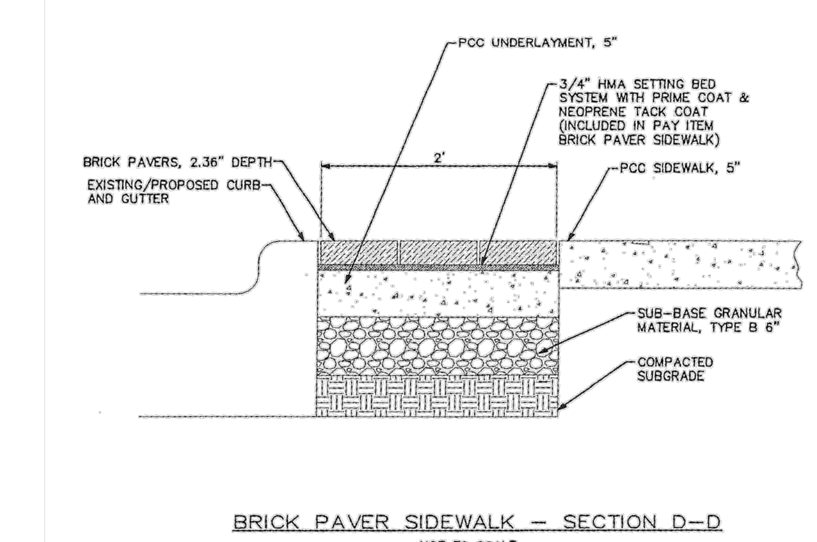


1. RESTRICTOR PLATE SHALL BE PERMANENTLY MOUNTED TO THE CONCRETE WALL BY MEANS OF 1/2"X4" ANCHOR BOLTS. THE ANCHOR BOLTS SHALL BE WELLED TO THE RESTRICTOR AFTER INSTALLATION.
2. THE RESTRICTOR PLATE, SPACER AND ANCHOR BOLTS SHALL BE HOT DIP GALVANIZED AFTER THE ORIFICE HAS BEEN CUT AND THE ANCHOR BOLTS HAVE BEEN WELDED.
3. CONSTRUCT MANHOLE AS PER STORM MANHOLE DETAIL.
4. PROVIDE MINIMUM 4" OF CA6 BEDDING MATERIAL UNDER MANHOLE BOTTOM SECTION AND FILL ENTIRE EXCAVATION ALL AROUND MANHOLE UP TO C.L. OF SEWER WITH BEDDING MATERIAL.

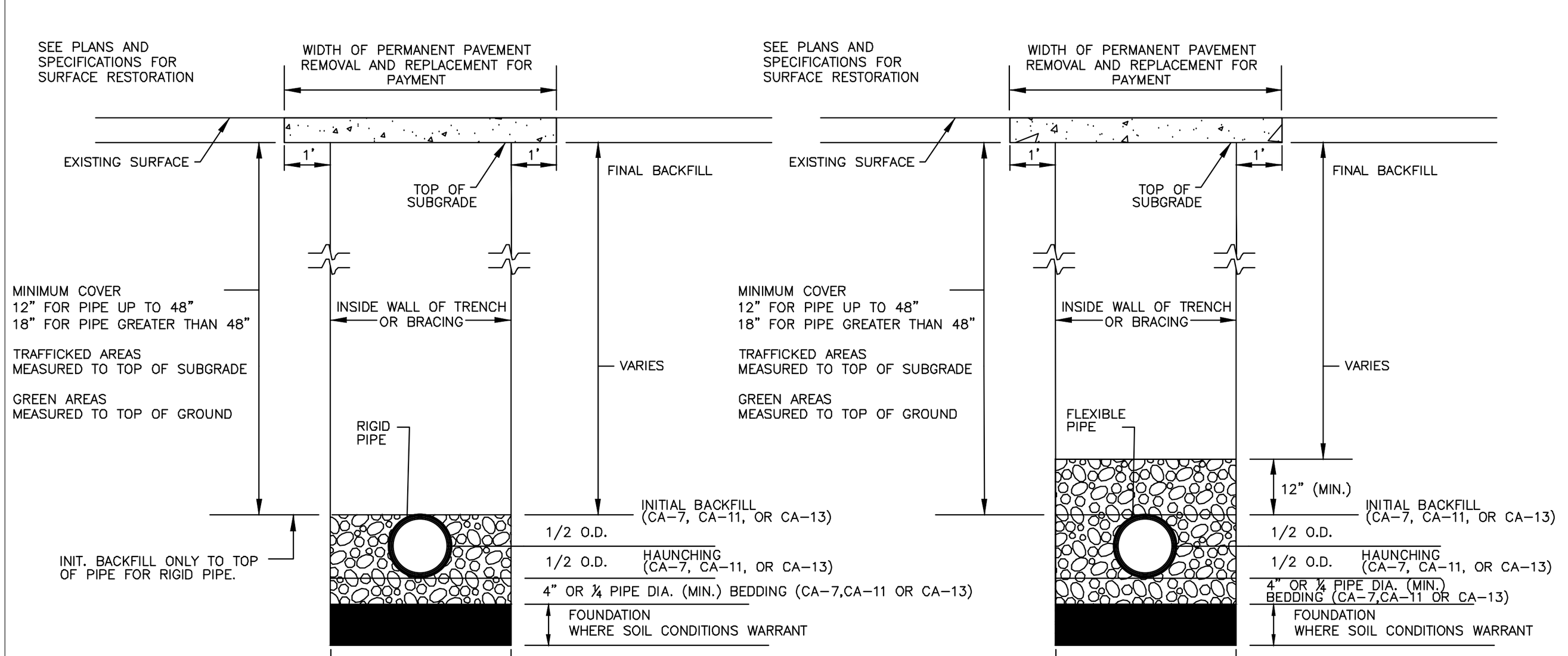
A FLEXIBLE AND WATERTIGHT RESILIENT CONNECTOR (MEETING THE REQUIREMENTS OF ASTM C-443 & C923 OR EQUIVALENT) SHALL BE USED FOR SEWER TO MANHOLE/CATCH BASIN/INLET CONNECTIONS

RESTRICTOR MANHOLE NO. 1 DETAIL

10.18.2016 AV



BRICK PAVER SIDEWALK – SECTION D–D
NOT TO SCALE



RIGID PIPE INSTALLATION DETAIL

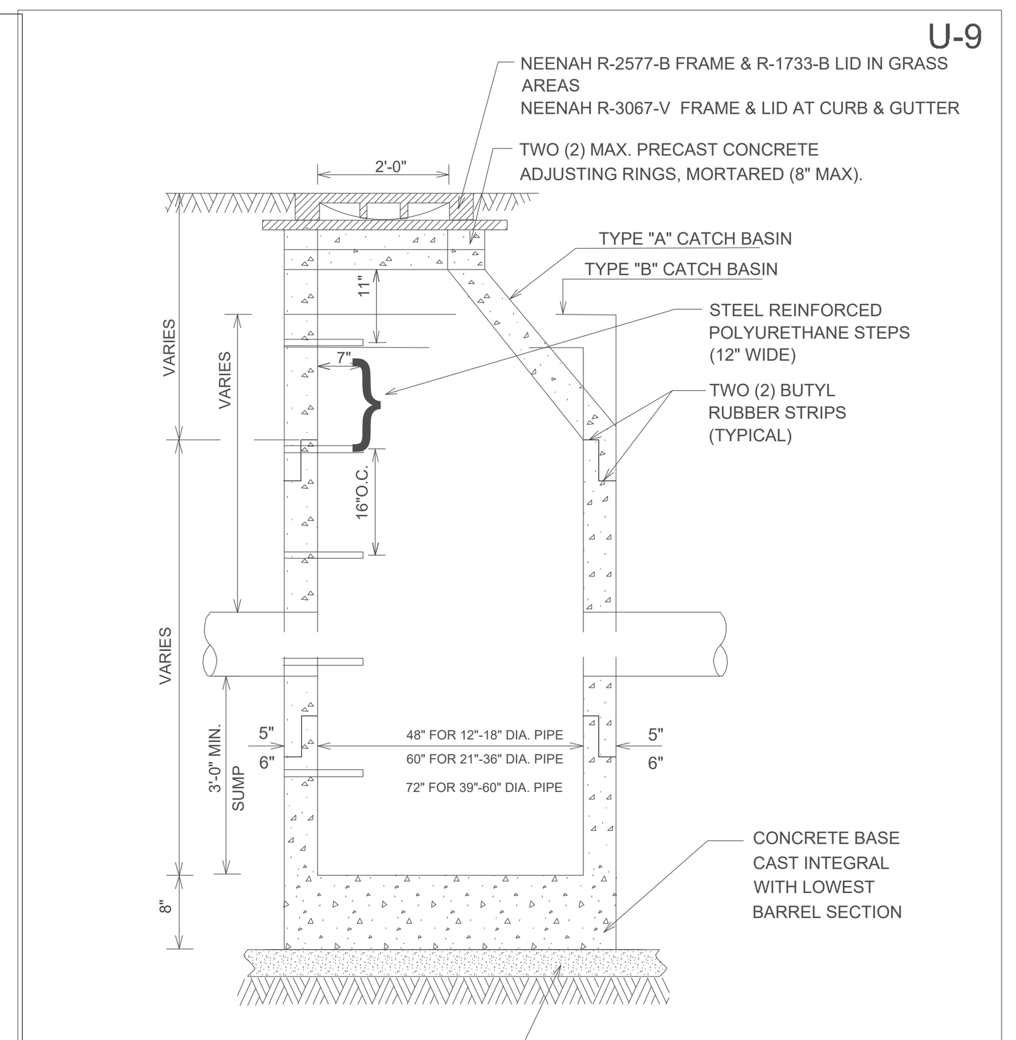
FLEXIBLE PIPE INSTALLATION DETAIL

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

U-9



NOTES:
1. MANHOLES MUST CONFORM TO ASTM C-478.
2. MANHOLE SECTIONS TO BE TONGUE AND GROOVED.
3. NON-PRECAST OPENINGS SHALL BE CORED, RUBBER BOOTED AND INTERIOR MORTARED AROUND PIPE.*
4. USE ECCENTRIC CONE ONLY.

* SEE PIPE CONNECTION TO STRUCTURE DETAIL U-5.
A FLEXIBLE AND WATERTIGHT RESILIENT CONNECTOR (MEETING THE REQUIREMENTS OF ASTM C-443 & C923 OR EQUIVALENT) SHALL BE USED FOR SEWER TO MANHOLE/CATCH BASIN/INLET CONNECTIONS

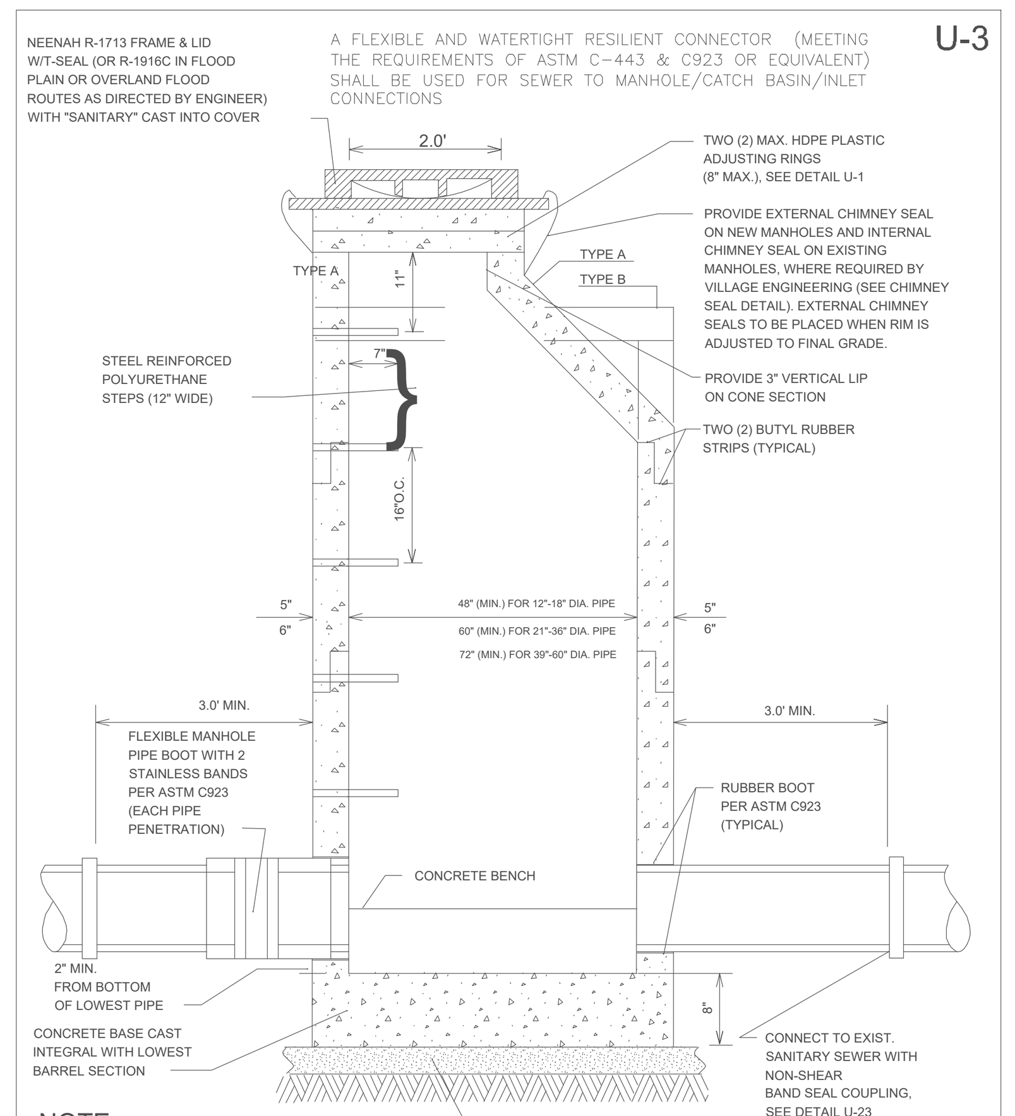
NOT TO SCALE

CATCH BASIN DETAIL

REVISED:02-28-07

U-3

A FLEXIBLE AND WATERTIGHT RESILIENT CONNECTOR (MEETING THE REQUIREMENTS OF ASTM C-443 & C923 OR EQUIVALENT) SHALL BE USED FOR SEWER TO MANHOLE/CATCH BASIN/INLET CONNECTIONS



NOTE:
1. MANHOLES MUST CONFORM TO ASTM C-478.
2. MANHOLE SECTIONS TO BE TONGUE AND GROOVED.
3. BENCHES MUST BE PROVIDED IN ALL SANITARY SEWER MANHOLES
4. USE EXTERNAL LIFTING "HOLES" ONLY, BUT NOT FULL PENETRATION.
5. ALL PIPE PENETRATIONS AND ALL NON-PRECAST OPENINGS SHALL BE CORED, RUBBER BOOTED AND INTERIOR MORTARED AROUND PIPE.*
6. USE ECCENTRIC CONE ONLY.

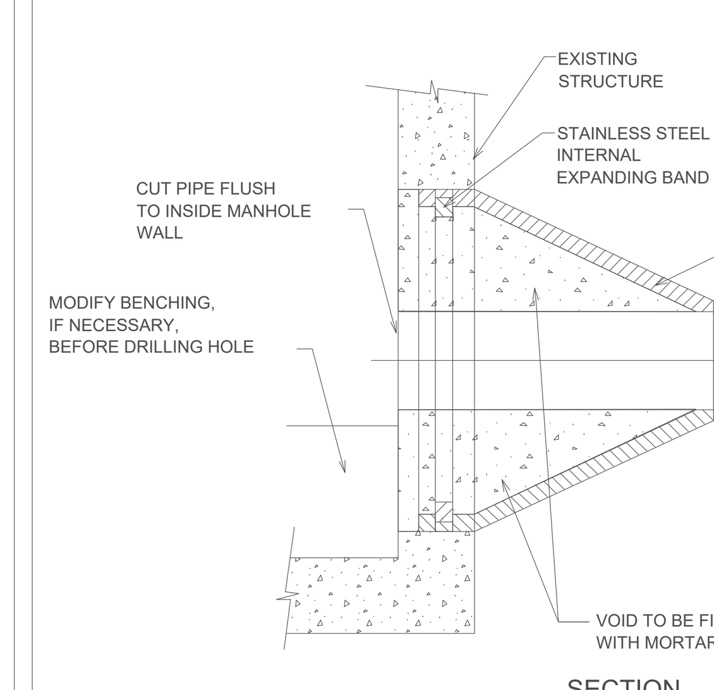
* SEE PIPE CONNECTION TO STRUCTURE DETAIL U-5.

NOT TO SCALE

SANITARY MANHOLE DETAIL

REVISED:01-01-14

U-5



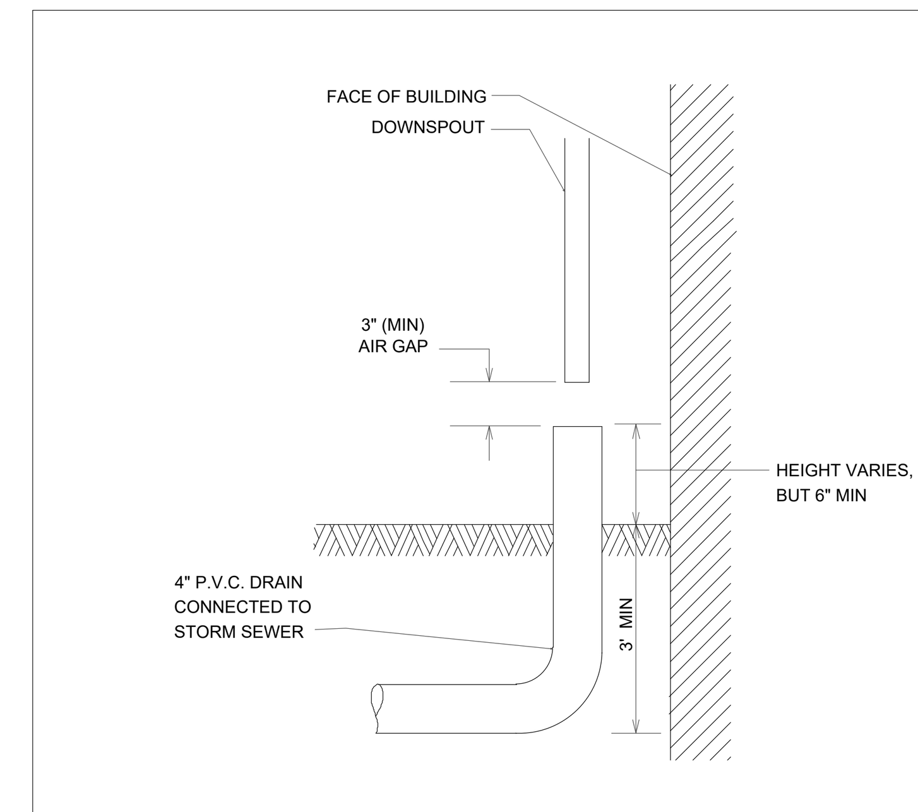
NOTES:
1. RESILIENT RUBBER CONNECTOR COMPLYING WITH ASTM STANDARD C-923 (MOST RECENT EDITION) SHALL BE USED.
2. CORE-DRILL CIRCULAR OPENING IN STRUCTURE WALL OF DIAMETER NECESSARY TO FIT THE REQUIRED BOOT SIZE.
3. KOR-N SEAL FLEXIBLE RUBBER BOOT (MANUFACTURED BY NATIONAL POLLUTION CONTROL SYSTEMS, INC.) MAY BE USED IF APPROVED BY VILLAGE ENGINEERING.
4. CUT, SHAPE AND SLOPE NEW INVERT CHANNEL IN THE EXISTING CONCRETE BENCH FOR SMOOTH FLOW FROM NEW CONNECTION.
5. CLEAN EXISTING STRUCTURE AND SEWER PIPE OF ANY DIRT, CONCRETE OR DEBRIS WHICH MAY ACCUMULATE DURING THE CONSTRUCTION PROCESS.

A FLEXIBLE AND WATERTIGHT RESILIENT CONNECTOR (MEETING THE REQUIREMENTS OF ASTM C-443 & C923 OR EQUIVALENT) SHALL BE USED FOR SEWER TO MANHOLE/CATCH BASIN/INLET CONNECTIONS

NOT TO SCALE

PIPE CONNECTION TO STRUCTURE DETAIL

REVISED:01-01-14



NOTE:
CONNECT DOWNSPOUTS TO THE PUBLIC STORM SEWER SYSTEM.
DOWN SPOUTS SHALL BE DESIGNED WITH A MINIMUM 3" AIR GAP.
A RIGID FOUR-INCH (4") DIAMETER PVC PIPE CAN BE USED TO CONNECT THE INDIVIDUAL DOWNSPOUT TO THE STORM SEWER.
IN NO EVENT SHALL THE DOWNSPOUT DISCHARGE INTO THE SANITARY SEWER SYSTEM.

NOT TO SCALE

DOWNSPOUT CONNECTION DETAIL

REVISED 5-25-11

ISSUE	REVISIONS	DATE
A	PRELIMINARY PLAN	09-08-2016
1	ISSUED FOR PERMIT	10-18-2016
2	REVISED PER VILLAGE COMMENTS	01-04-2017
3	REVISIONS PER MWRD/IDOT COMMENTS	01-24-2017
4	REVISIONS PER MWRD/IDOT COMMENTS	03-27-2017
5	REVISIONS PER MWRD/IEPA/IDOT COMMENTS	05-11-2017
6	REVISIONS PER MWRD COMMENTS-CHANGED DETENTION PIPE TO CONCRETE.	10-12-2017

PROJECT STAFF
PROJECT MANAGER: B. BONO P.E.
ENGINEER: A. VEER P.E.
ENGINEER:
TECHNICIAN:

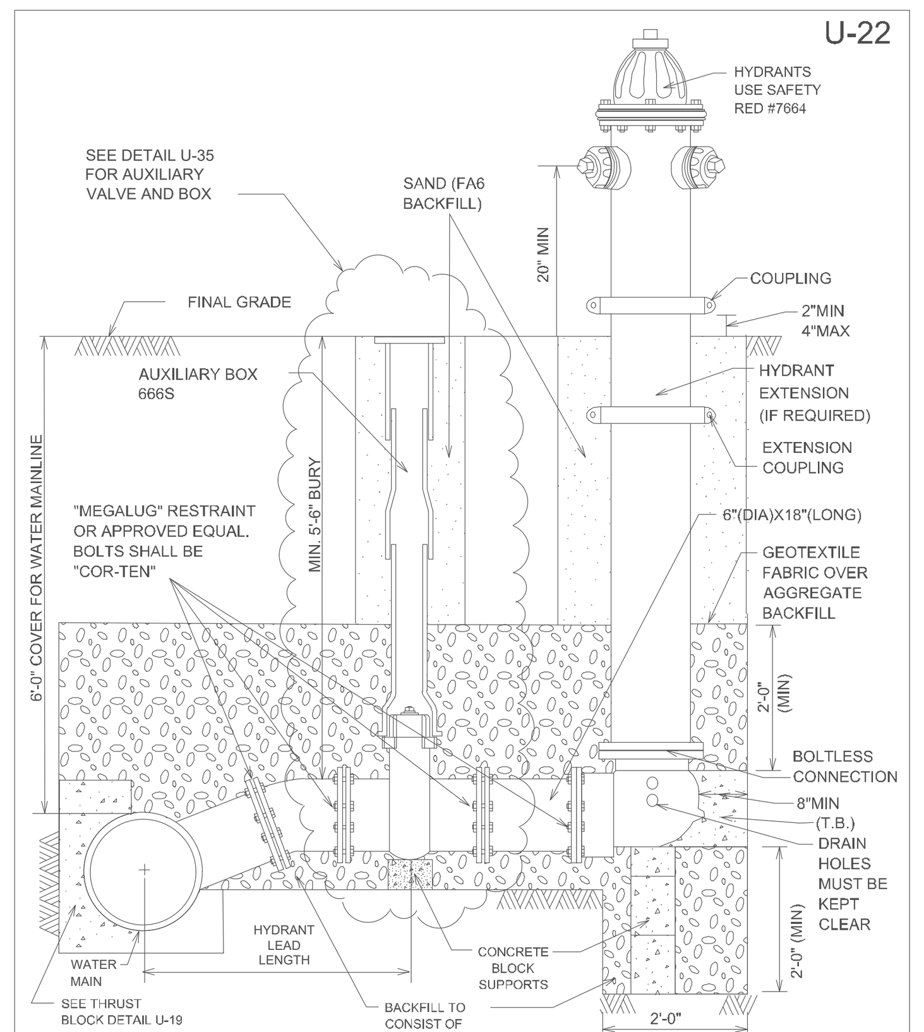
BCI
BONO CONSULTING, INC.
CIVIL ENGINEERS
1018 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH : (847) 823-3300
FAX: (847) 823-3303
bbono@bonoconsulting.com

STANDARD DETAILS

5 UNIT TOWNHOUSE DEVELOPMENT
8163 N. LINCOLN, SKOKIE, ILLINOIS

PROJECT NUMBER: 16189
START DATE: AUG 28, 2016
GRAPHIC SCALE
0
SCALE: NTS

U-22


HYDRANTS USE SAFETY RED #7664
SEE DETAIL U-35 FOR AUXILIARY VALVE AND BOX
SAND (FA6 BACKFILL)
20" MIN
COUPLING
2"MIN 4"MAX
FINAL GRADE
AUXILIARY BOX 666S
HYDRANT EXTENSION (IF REQUIRED)
EXTENSION COUPLING
MIN. 5'-6" BURY
6'-0" COVER FOR WATER MAINLINE
"MEGALUG" RESTRAINT OR APPROVED EQUAL. BOLTS SHALL BE "COR-TEN"
6"(DIA)X18"(LONG)
GEOTEXTILE FABRIC OVER AGGREGATE BACKFILL
2'-0" (MIN)
BOLTLESS CONNECTION
8"MIN (T.B.)
DRAIN HOLES MUST BE KEPT CLEAR
HYDRANT LEAD LENGTH
WATER MAIN
CONCRETE BLOCK SUPPORTS
2'-0" (MIN)
SEE THRUST BLOCK DETAIL U-19
BACKFILL TO CONSIST OF IDOT CA 7.
2'-0"

NOTES:

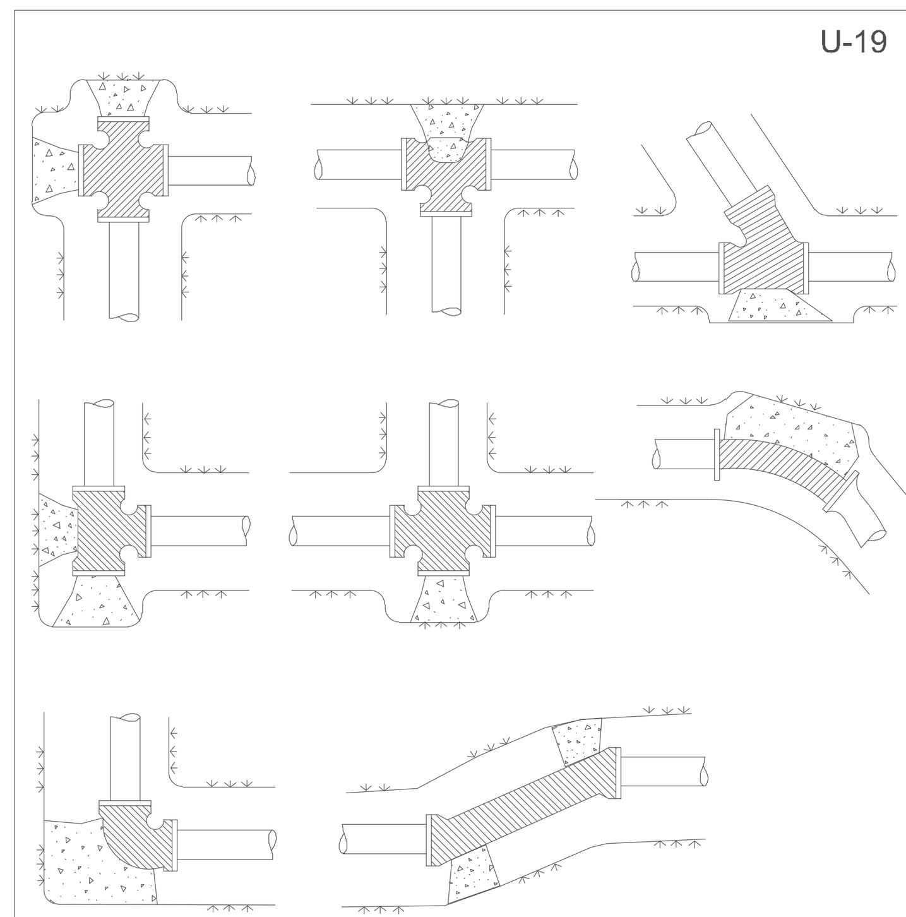
1. MUELLER SUPER CENTURION A-425 HYDRANT.
2. ALL HYDRANTS TO HAVE TWO 2½" PUMPER NOZZLES, N.S.T.
3. MECHANICAL JOINT SHOE WITH 6" RESILIENT WEDGE AUXILIARY VALVE.
4. MAIN VALVE OPENING SHALL BE 5¼".
5. HYDRANT BARREL SHALL BE ONE PIECE DUCTILE IRON PIPE, POLY-WRAPPED (AS WATER MAIN) TO HYDRANT BASE.
6. HYDRANT LEADS TO BE 6" DIAMETER UP TO 25' LONG AND 8" DIAMETER IF GREATER THAN 25'.

NOT TO SCALE

HYDRANT DETAIL

REVISED:01-01-17

U-19



NOTE:

1. ALL BENDS OF 10° AND LARGER SHALL BE BLOCKED WITH AT LEAST 10" THICK POURED IN PLACE CONCRETE BLOCKS AGAINST UNDISTURBED VERTICAL EARTH FACE.

2. ALL CONCRETE TO BE MIN. 3,000 PSI.

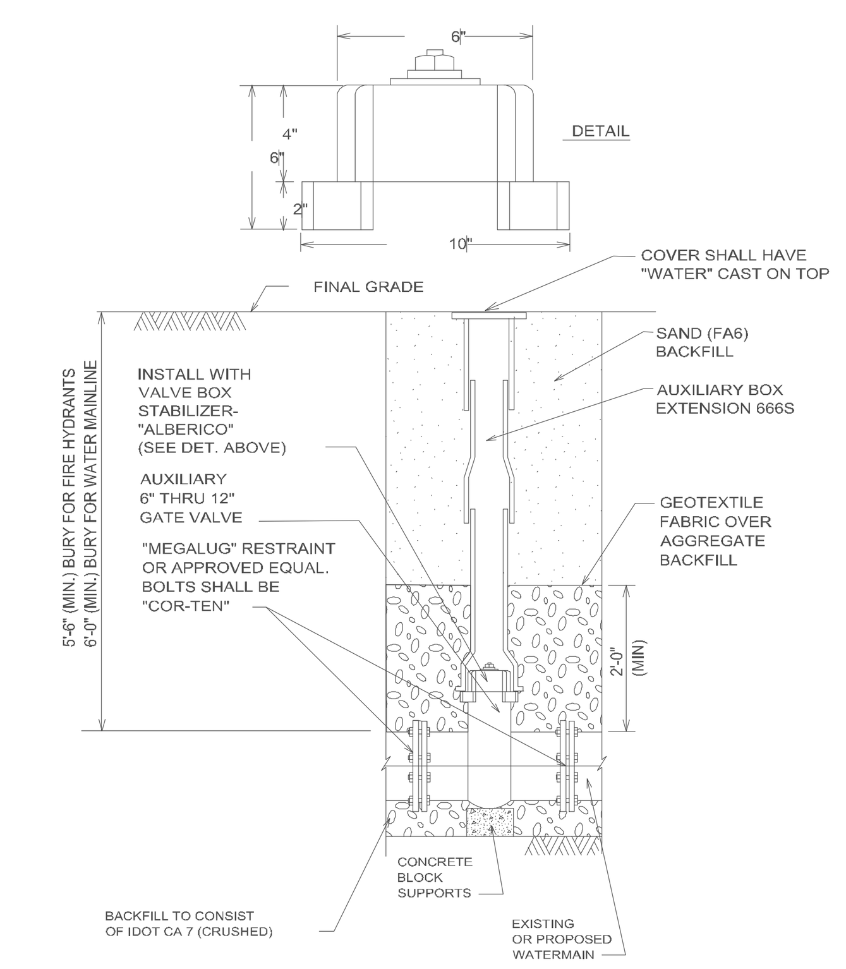
3. IN ADDITION TO THE ABOVE THRUST BLOCKING: ALL MECHANICAL JOINTS, (BENDS OVER 10, TEES, CROSSES, VALVES AND FIRE HYDRANTS) SHALL HAVE A "MEGALUG" RESTRAINT, OR AS APPROVED BY VILLAGE ENGINEERING. BOLTS SHALL BE "COR-TEN".

NOT TO SCALE

THRUST BLOCK DETAIL

REVISED:01-01-17

U-35


6"
4"
6"
2"
10"
DETAIL
COVER SHALL HAVE "WATER" CAST ON TOP
FINAL GRADE
SAND (FA6) BACKFILL
AUXILIARY BOX EXTENSION 666S
5'-6" (MIN.) BURY FOR FIRE HYDRANTS
6'-0" (MIN.) BURY FOR WATER MAINLINE
INSTALL WITH VALVE BOX STABILIZER- "ALBERICO" (SEE DET. ABOVE)
AUXILIARY 6" THRU 12" GATE VALVE
"MEGALUG" RESTRAINT OR APPROVED EQUAL. BOLTS SHALL BE "COR-TEN"
GEOTEXTILE FABRIC OVER AGGREGATE BACKFILL
2'-0" (MIN)
CONCRETE BLOCK SUPPORTS
BACKFILL TO CONSIST OF IDOT CA 7 (CRUSHED)
EXISTING OR PROPOSED WATERMAIN

NOTES:

1. ONLY AUXILIARY BOX EXTENSIONS ARE PERMITTED, NO ADAPTERS OR RISERS.
2. ALL PARTS OF AUXILIARY BOX INCLUDING THE COVER, SHALL BE CAST IRON.

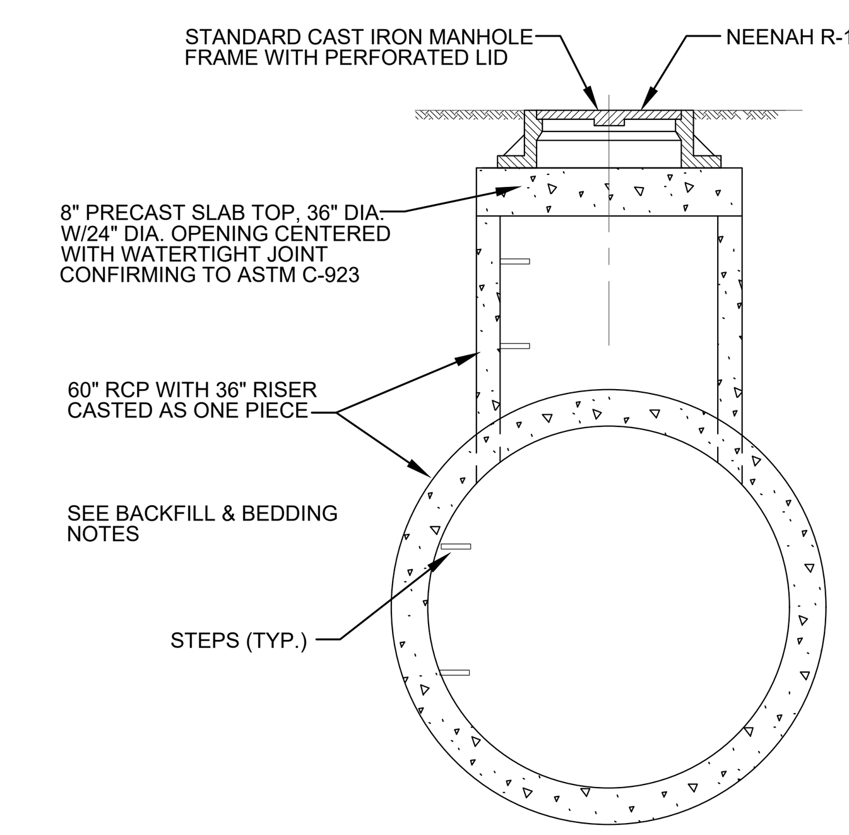
NOT TO SCALE

AUXILIARY BOX & VALVE DETAIL

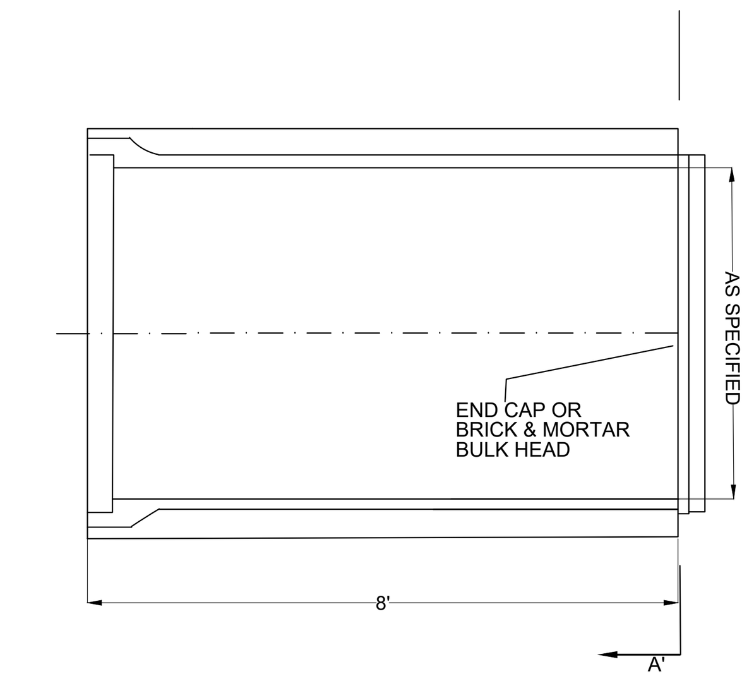
REVISED:01-01-17

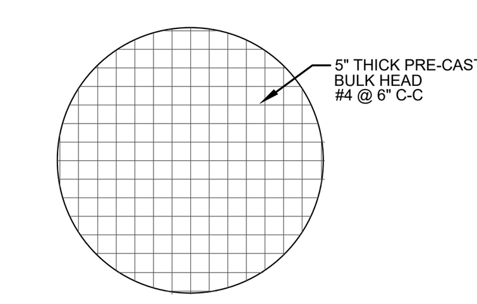
NOTE TO CONTRACTOR:

TO AVOID UNEVEN PAVEMENT SETTLING, PIPE BEDDING COMPACTION SHALL BE DONE TO THE SPRINGLINE AND THE BACKFILL SHALL BE COMPACTED TO 95% MODIFIED PROCTOR ABOVE THE SPRINGLINE IN MAX. 4" THICK LIFTS.

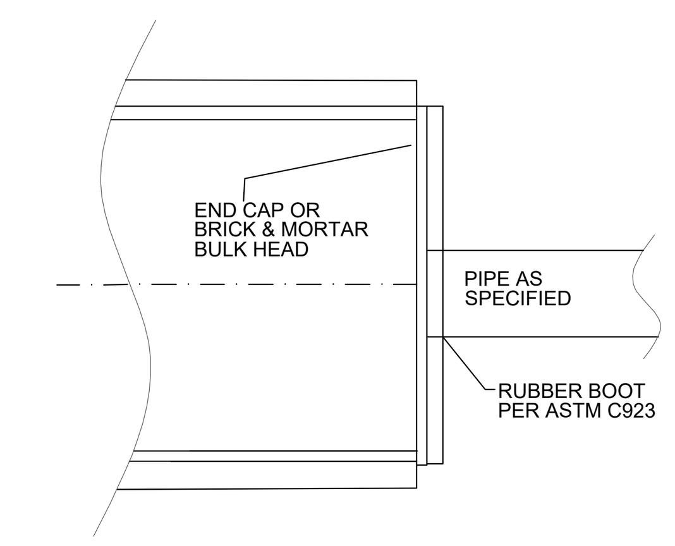


36" RISER ON 60" DETENTION PIPE





BULKHEAD DETAIL - MONOLITHIC WITH PIPE
NTS



BULKHEAD TO PIPE CONNECTION
NTS

PROJECT STAFF	
PROJECT MANAGER:	B. BONO P.E.
ENGINEER:	A. VEER P.E.
ENGINEER:	
TECHNICIAN:	

ISSUE	REVISIONS	DATE
A	PRELIMINARY PLAN	09-08-2016
1	ISSUED FOR PERMIT	10-18-2016
2	REVISED PER VILLAGE COMMENTS	01-04-2017
3	REVISIONS PER MWRD/IDOT COMMENTS	01-24-2017
4	REVISIONS PER MWRD/IDOT COMMENTS	03-27-2017
5	REVISIONS PER MWRD/IEPA/IDOT COMMENTS	05-11-2017
6	REVISIONS PER MWRD COMMENTS-CHANGED DETENTION PIPE TO CONCRETE.	10-12-2017

BONO CONSULTING, INC.
CIVIL ENGINEERS
1018 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH : (847) 823-3300
FAX: (847) 823-3303
bbono@bonoconsulting.com

STANDARD DETAILS

5 UNIT TOWNHOUSE DEVELOPMENT
8163 N. LINCOLN, SKOKIE, ILLINOIS

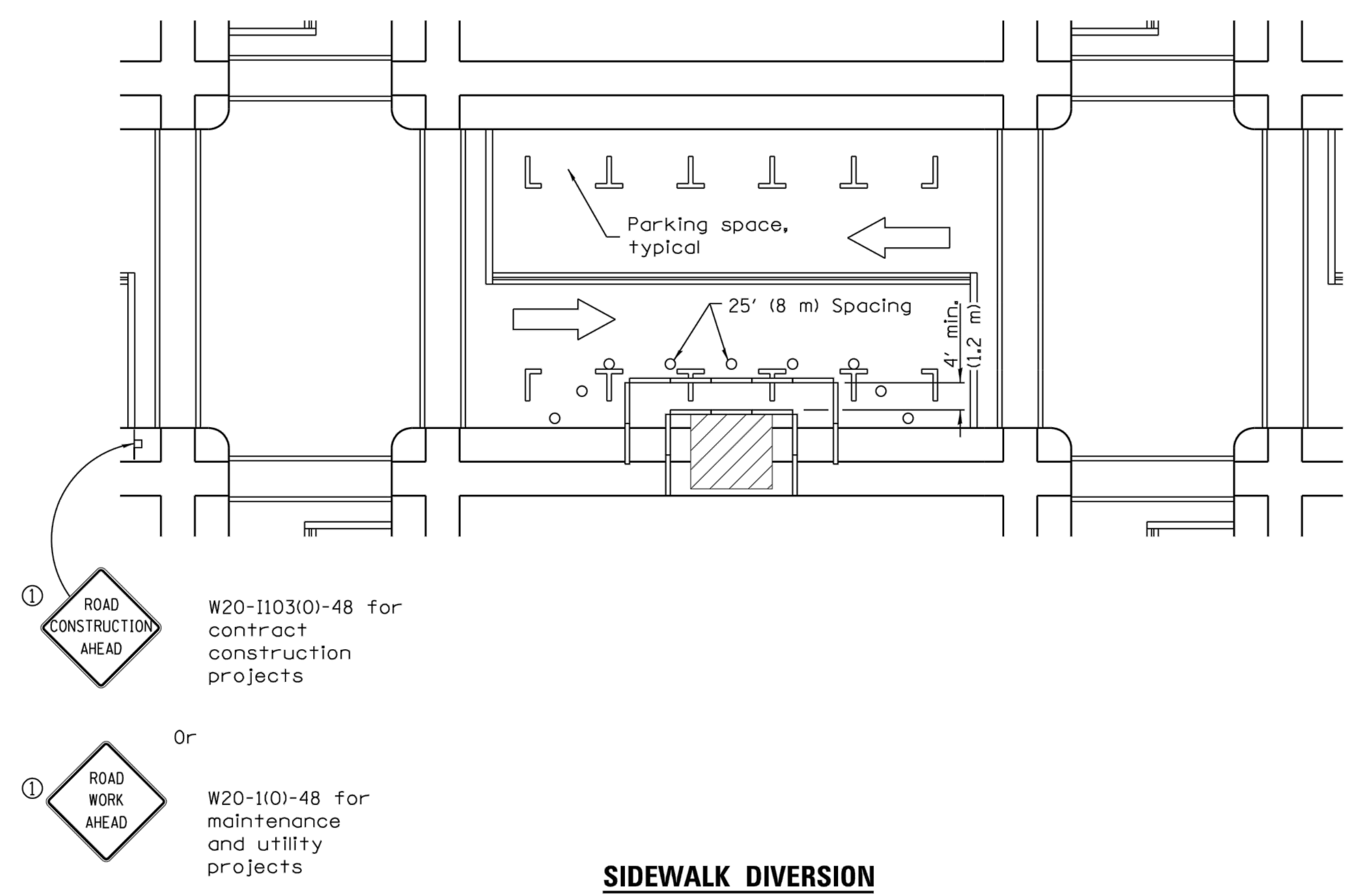
PROJECT NUMBER: 16189

START DATE: AUG 28, 2016

GRAPHIC SCALE
0

SCALE: NTS

SHEET NUMBER

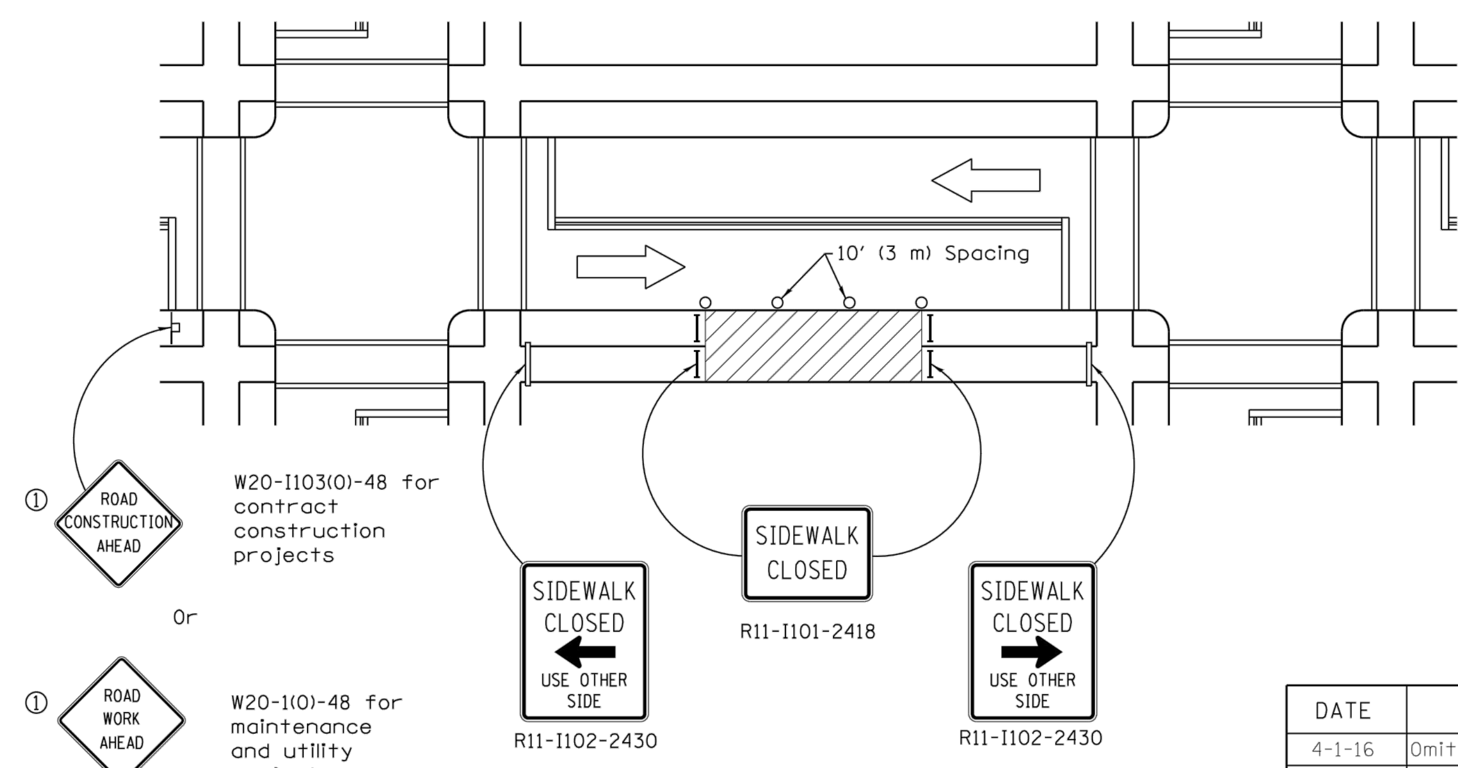


SIDEWALK DIVERSION

① Omit whenever duplicated by road work traffic control.

SYMBOLS

▨ Work area
Sign on portable or permanent support
Barricade or drum
Cone, drum or barricade
Type III barricade
Detectable pedestrian channelizing barricade



SIDEWALK CLOSURE

GENERAL NOTES

This Standard is used where, at any time, pedestrian traffic must be rerouted due to work being performed.

This Standard must be used in conjunction with other Traffic Control & Protection Standards when roadway traffic is affected.

Temporary facilities shall be detectable and accessible.

The temporary pedestrian facilities shall be provided on the same side of the closed facilities whenever possible.

The SIDEWALK CLOSED / USE OTHER SIDE sign shall be placed at the nearest crosswalk or intersection to each end of the closure. Where the closure occurs at a corner, the signs shall be erected on the corners across the street from the closure. The SIDEWALK CLOSED signs shall be used at the ends of the actual closures.

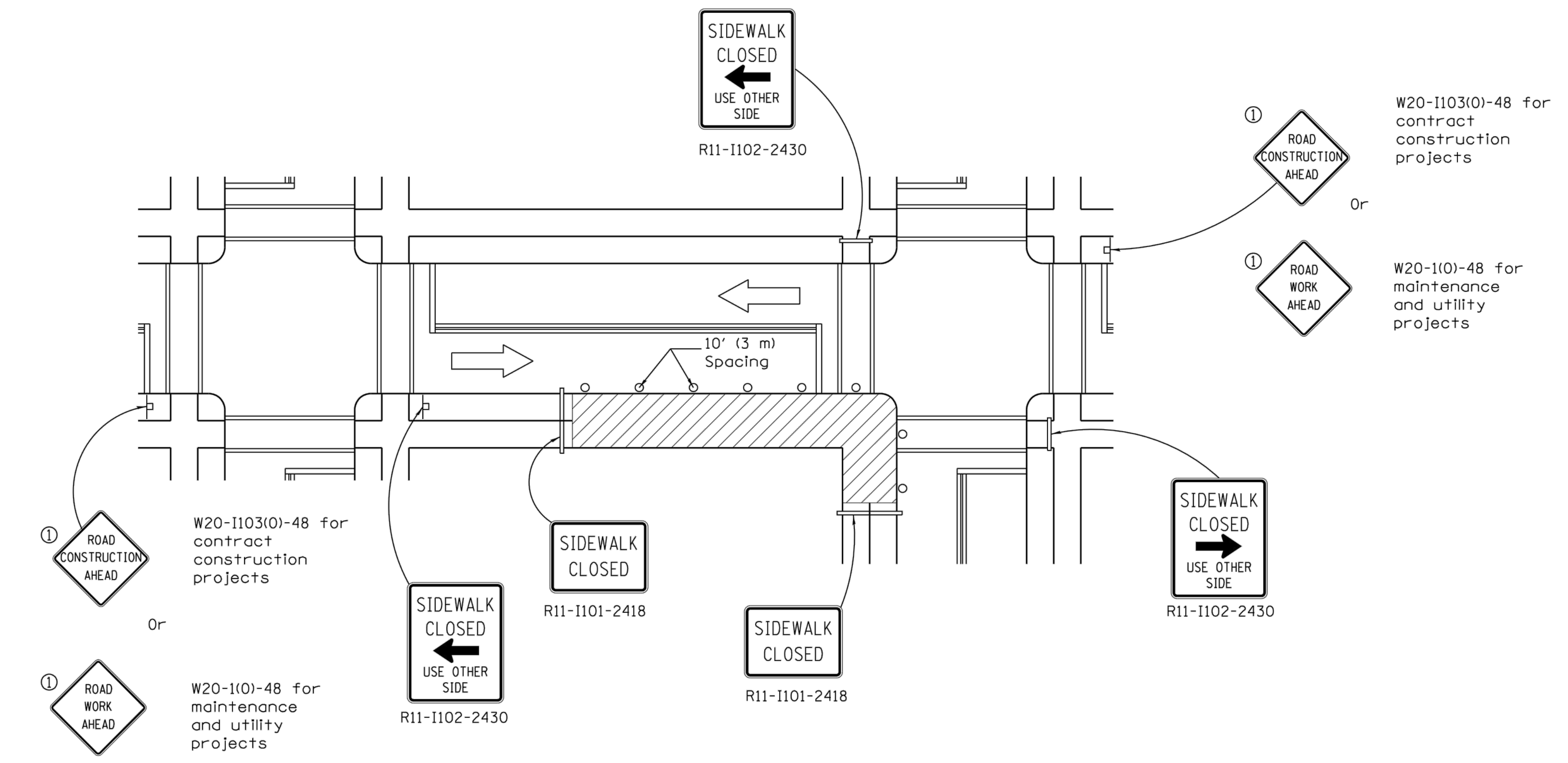
Type III barricades and R11-2-4830 signs shall be positioned as shown in "ROAD CLOSED TO ALL TRAFFIC" detail on Standard 701901.

All dimensions are in inches (millimeters) unless otherwise shown.

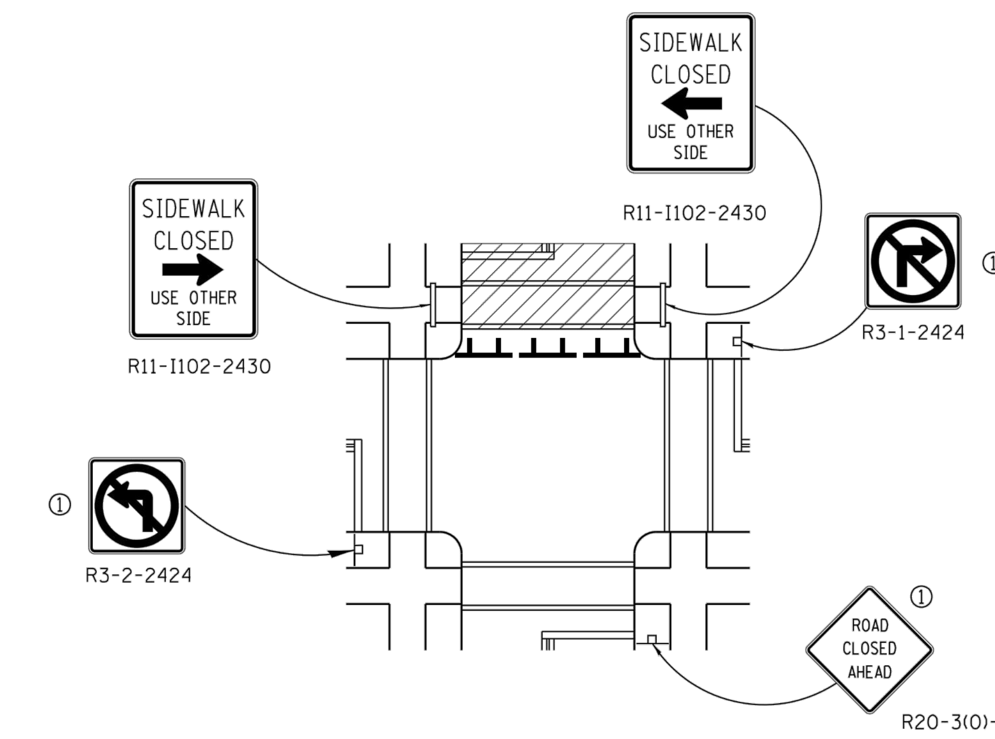
Illinois Department of Transportation
APPROVED April 1, 2016
ENGINEER OF SAFETY ENGINEERING
APPROVED April 1, 2016
ENGINEER OF DESIGN AND EVIRONMENT
ISSUED 1-1-97

DATE	REVISIONS
4-1-16	Omitted orange safety fence from standard as this is covered in the std. spec.
1-1-12	Added SIDEWALK DIVERSION. Modified appearance of plan views. Renamed Std.

SIDEWALK, CORNER OR CROSSWALK CLOSURE
(Sheet 1 of 2)
STANDARD 701801–06



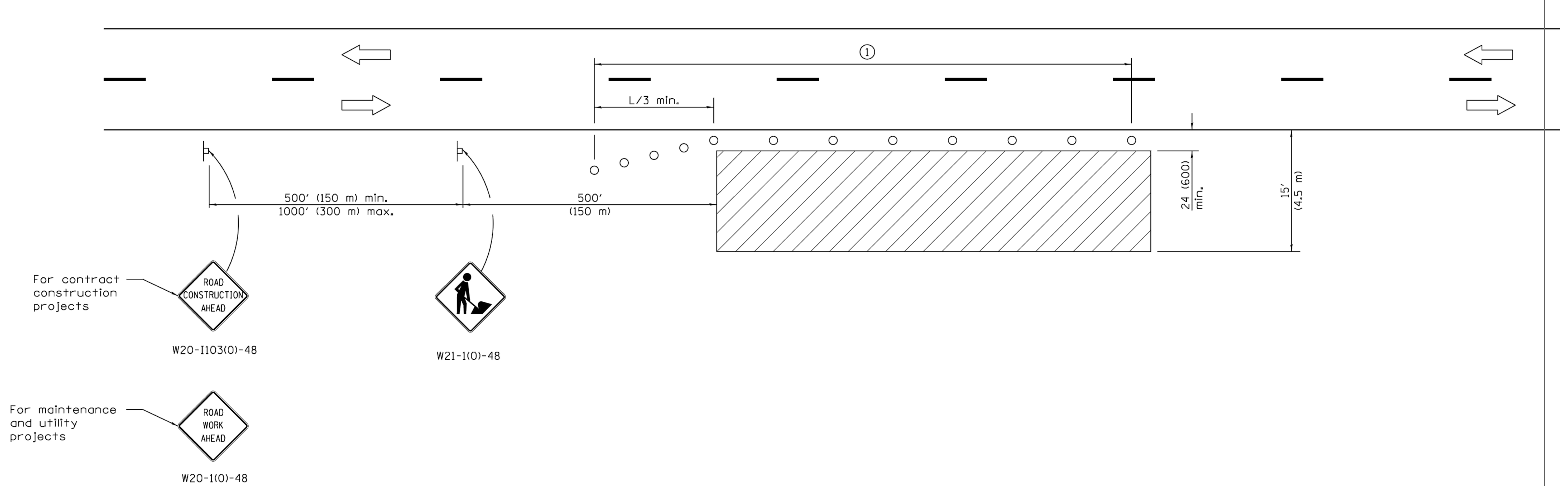
CORNER CLOSURE



CROSSWALK CLOSURE

Illinois Department of Transportation
APPROVED April 1, 2016
ENGINEER OF SAFETY ENGINEERING
APPROVED April 1, 2016
ENGINEER OF DESIGN AND EVIRONMENT
ISSUED 1-1-97

SIDEWALK, CORNER OR CROSSWALK CLOSURE
(Sheet 2 of 2)
STANDARD 701801–06



TYPICAL APPLICATIONS
Utility operations
Culvert extensions
Side slope changes
Guardrail installation and maintenance
Delineator installation
Landscaping operations
Shoulder repair
Sign installation and maintenance

SYMBOLS

▨ Work area
Sign
○ Cone, drum or barricade

① When the work operation exceeds one hour, cones, drums or barricades shall be placed at 25' (8 m) centers for L/3 distance, and at 50' (15 m) centers through the remainder of the work area.

GENERAL NOTES
This Standard is used where any vehicles, equipment, workers or their activities will encroach in the area 15' (4.5 m) to 24 (600) from the edge of pavement.

Calculate L as follows:

SPEED LIMIT	FORMULAS English	(Metric)
40 mph (70 km/h) or less:	$L=\frac{WS^2}{60}$	$L=\frac{WS^2}{150}$
45 mph (80 km/h) or greater:	L=(W)(S)	L=0.65(W)(S)

W = Width of offset in feet (meters).

S = Normal posted speed mph (km/h).

All dimensions are in inches (millimeters) unless otherwise shown.

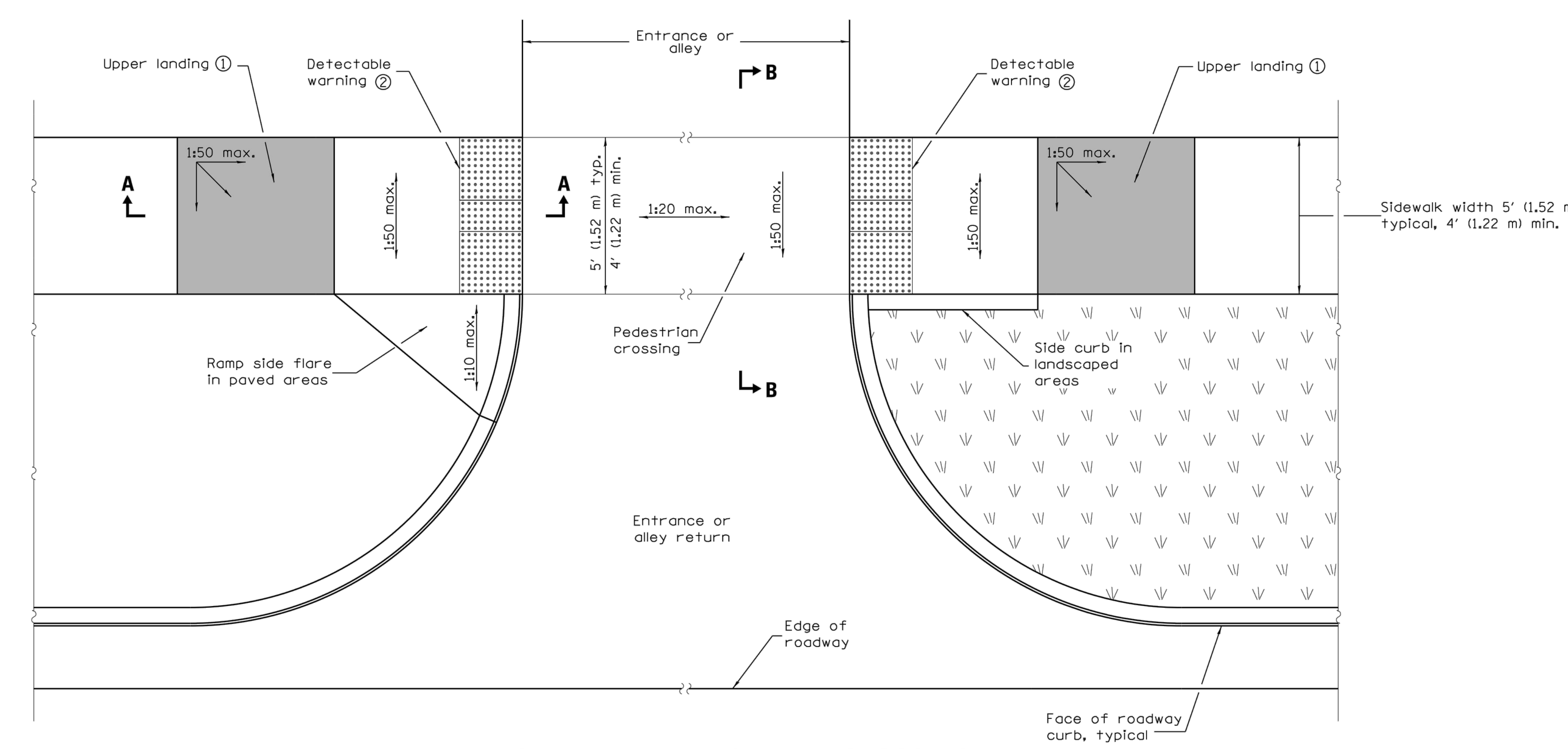
Illinois Department of Transportation
APPROVED January 1, 2014
ENGINEER OF SAFETY ENGINEERING
APPROVED January 1, 2014
ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

DATE	REVISIONS
1-1-14	Revised workers sign number to agree with current MUTCD.
1-1-13	Omitted text 'WORKERS' sign.

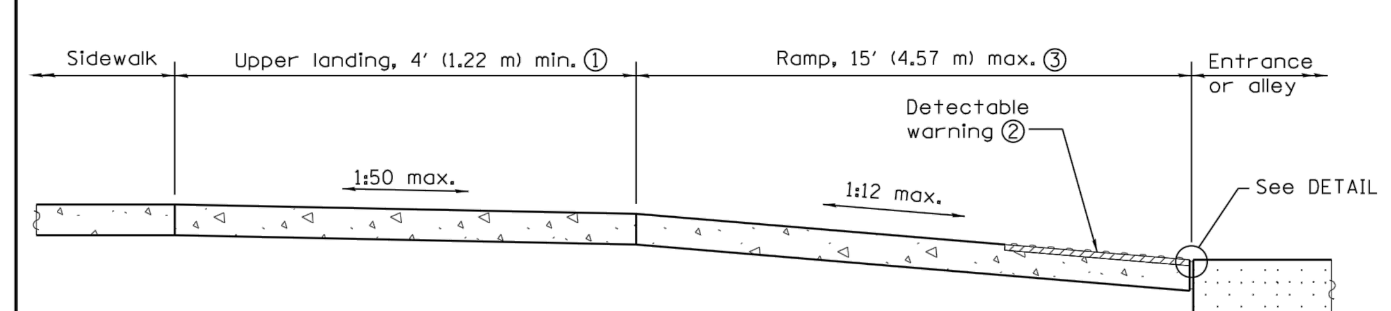
OFF–RD OPERATIONS, 2L, 2W, 15' (4.5 m) TO 24" (600 mm) FROM PAVEMENT EDGE
STANDARD 701006–05

② Detectable warning shall only be installed at entrances/alleys with permanent traffic control devices (i.e. stop signs, signals).

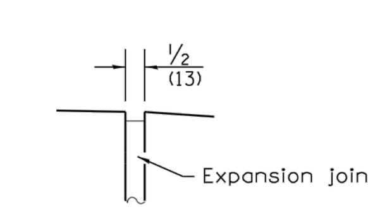
③ Where possible, maintain the grade of the sidewalk across the entrance/alley to avoid the need for ramps and upper landings.



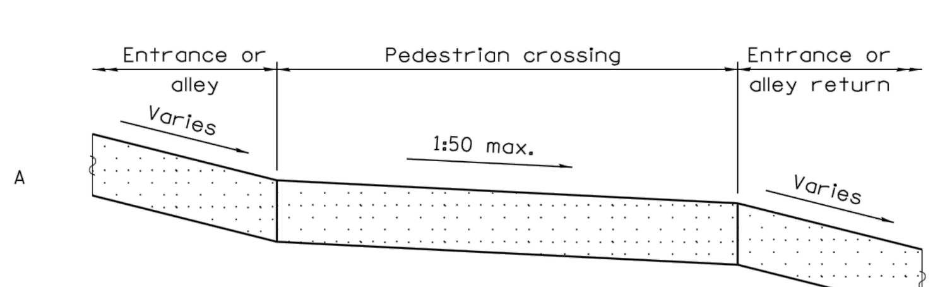
ENTRANCE /ALLEY PEDESTRIAN CROSSING



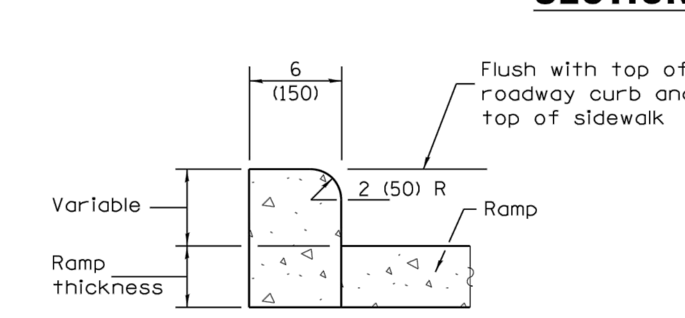
SECTION A–A
① Upper landing not required for ramp slopes flatter than 1:20.



DETAIL A



SECTION B–B



SIDE CURB DETAIL

GENERAL NOTES
All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).

Where 1:50 maximum slope is shown, 1:64 is preferred.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation
PASSED January 1, 2013
Michael Brand
ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2013
ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-12

DATE	REVISIONS
1-1-13	Revised General Notes.
1-1-12	New standard.

ENTRANCE / ALLEY PEDESTRIAN CROSSINGS
STANDARD 424026–01

DATE	REVISIONS	ISSUE
09-08-2016	PRELIMINARY PLAN	A
10-18-2016	ISSUED FOR PERMIT	1
01-04-2017	REVISED PER VILLAGE COMMENTS	2
01-24-2017	REVISIONS PER MWRD/IDOT COMMENTS	3
03-27-2017	REVISIONS PER MWRD/IDOT COMMENTS	4
05-11-2017	REVISIONS PER MWRD/IEPA/IDOT COMMENTS	5
10-12-2017	REVISIONS PER MWRD COMMENTS-CHANGED DETENTION PIPE TO CONCRETE.	6

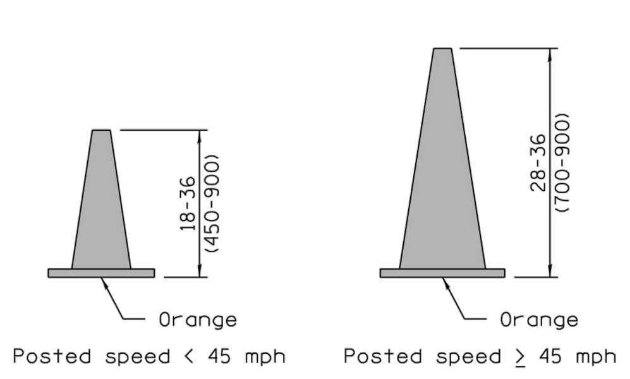
PROJECT STAFF
PROJECT MANAGER: B. BONO P.E.
ENGINEER: A. VEER P.E.
ENGINEER:
TECHNICIAN:

BCI
BONO CONSULTING, INC.
CIVIL ENGINEERS
1018 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH : (847) 823-3300
FAX: (847) 823-3303
bbono@bonoconsulting.com

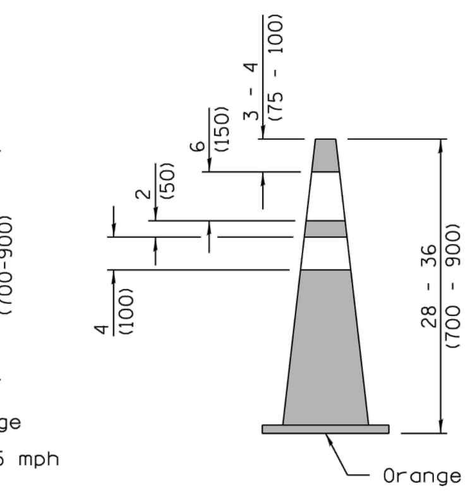
IDOT HIGHWAY STANDARDS

5 UNIT TOWNHOUSE DEVELOPMENT
8163 N. LINCOLN, SKOKIE, ILLINOIS

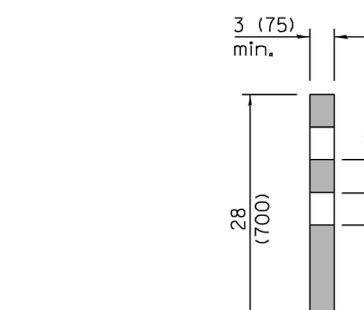
PROJECT NUMBER: 16189
START DATE: AUG 28, 2016
GRAPHIC SCALE
0
SCALE: NTS



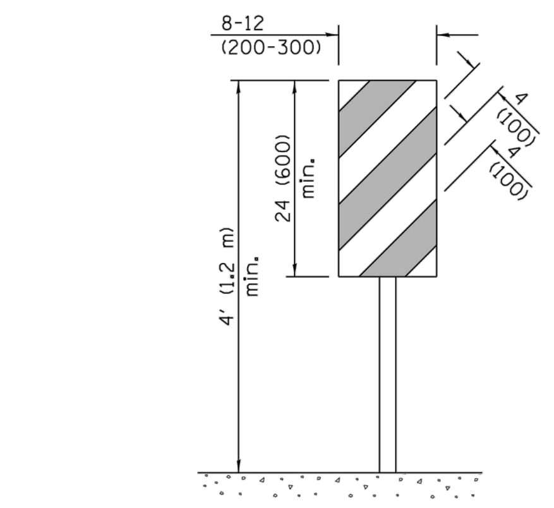
CONE FOR DAYTIME



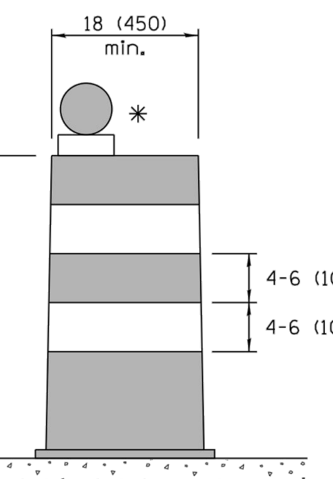
REFLECTORIZED CONE FOR NIGHTTIME



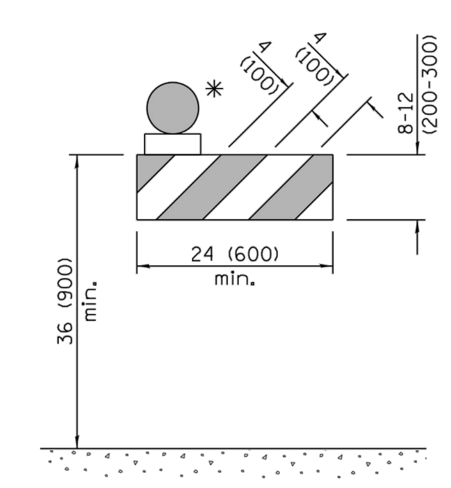
TUBULAR MARKER



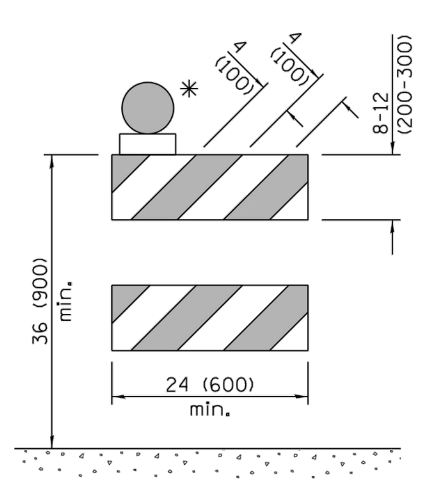
VERTICAL PANEL
POST MOUNTED



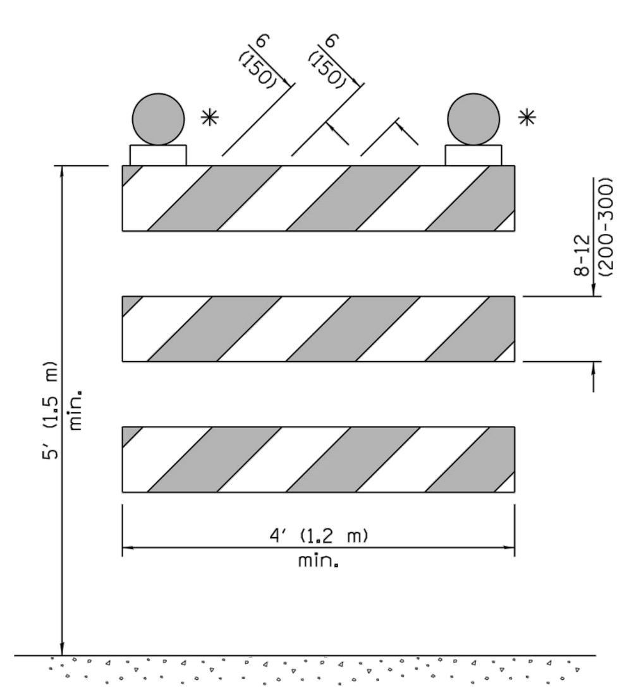
DRUM



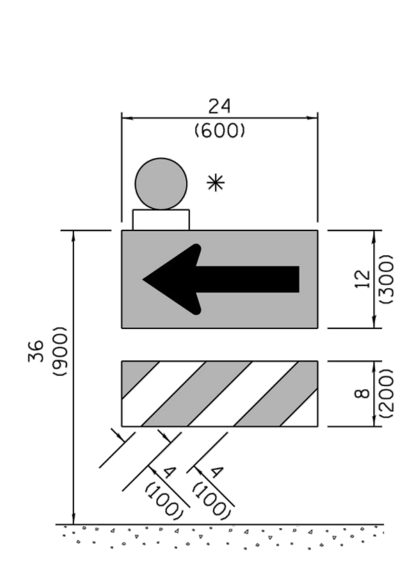
TYPE I BARRICADE



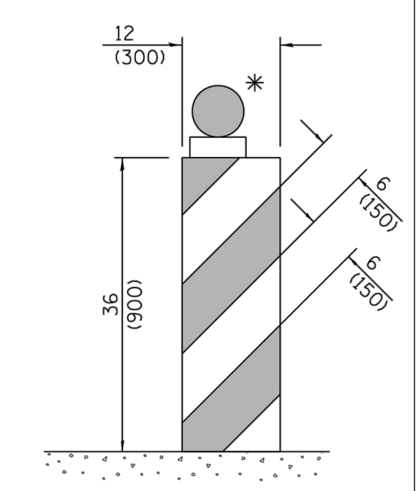
TYPE II BARRICADE



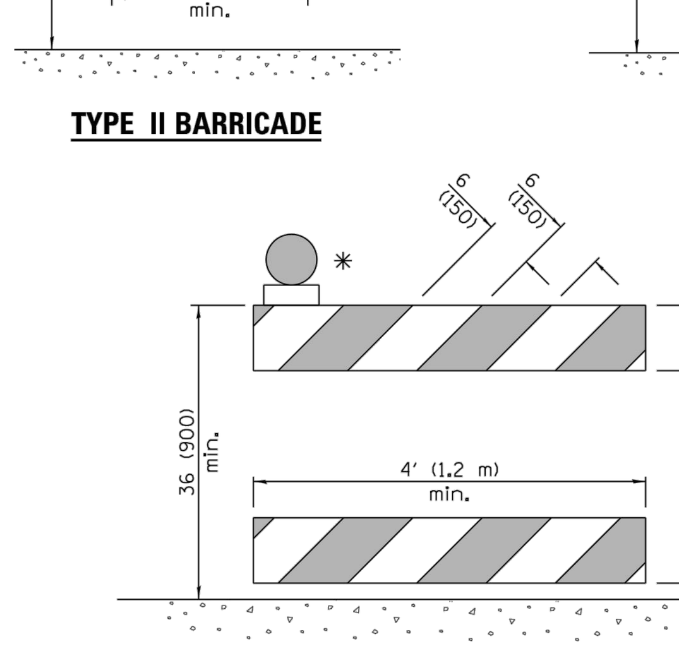
TYPE III BARRICADE



DIRECTION INDICATOR BARRICADE



VERTICAL BARRICADE



DETECTABLE PEDESTRIAN CHANNELIZING BARRICADE

✳ Warning lights (if required)

GENERAL NOTES

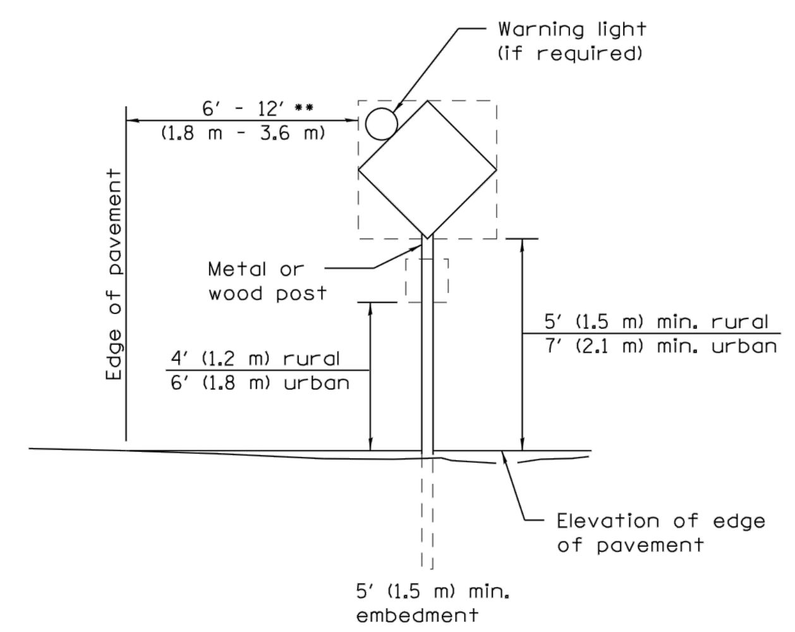
All heights shown shall be measured above the pavement surface.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation
APPROVED January 1, 2017
[illegible]
ENGINEER OF OPERATIONS
APPROVED January 1, 2017
[illegible]
ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

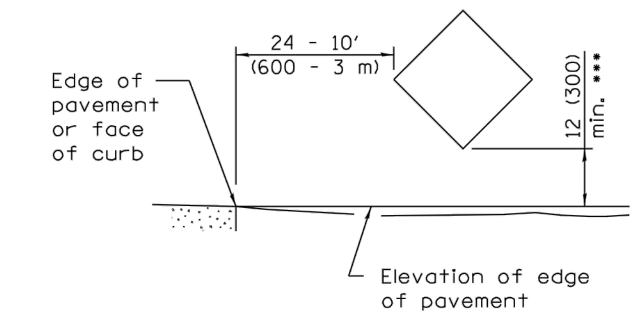
DATE	REVISIONS
1-1-17	Changed FLEXIBLE DELINEATOR
	to TUBULAR MARKER.
4-1-16	Add dim's to barricades. Rev.
	note for post mnt. signs.
	Rev. cone dtls. Add W12-I103.

TRAFFIC CONTROL DEVICES
(Sheet 1 of 3)
STANDARD 701901-06



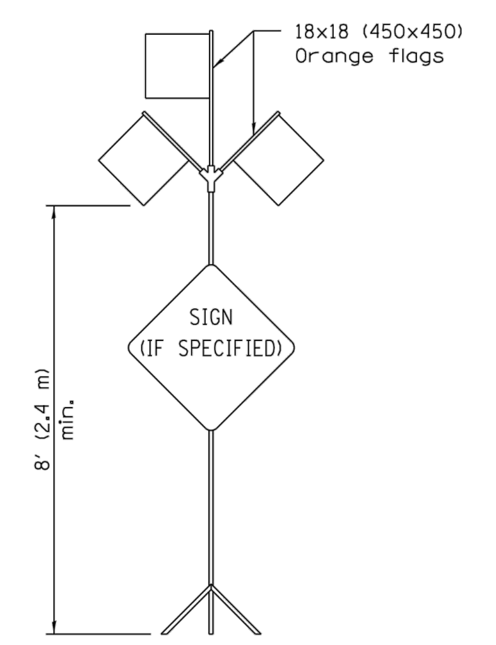
POST MOUNTED SIGNS

•• When curb or paved shoulder are present this dimension shall be 24 (600) to the face of curb or 6' (1.8 m) to the outside edge of the paved shoulder.

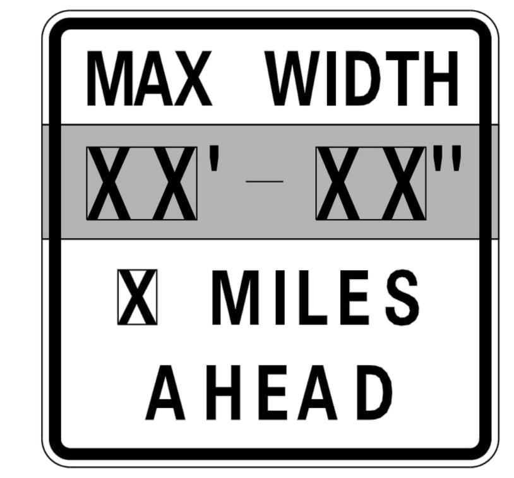


SIGNS ON TEMPORARY SUPPORTS

••• When work operations exceed four days, this dimension shall be 5' (1.5 m) min. If located behind other devices, the height shall be sufficient to be seen completely above the devices.



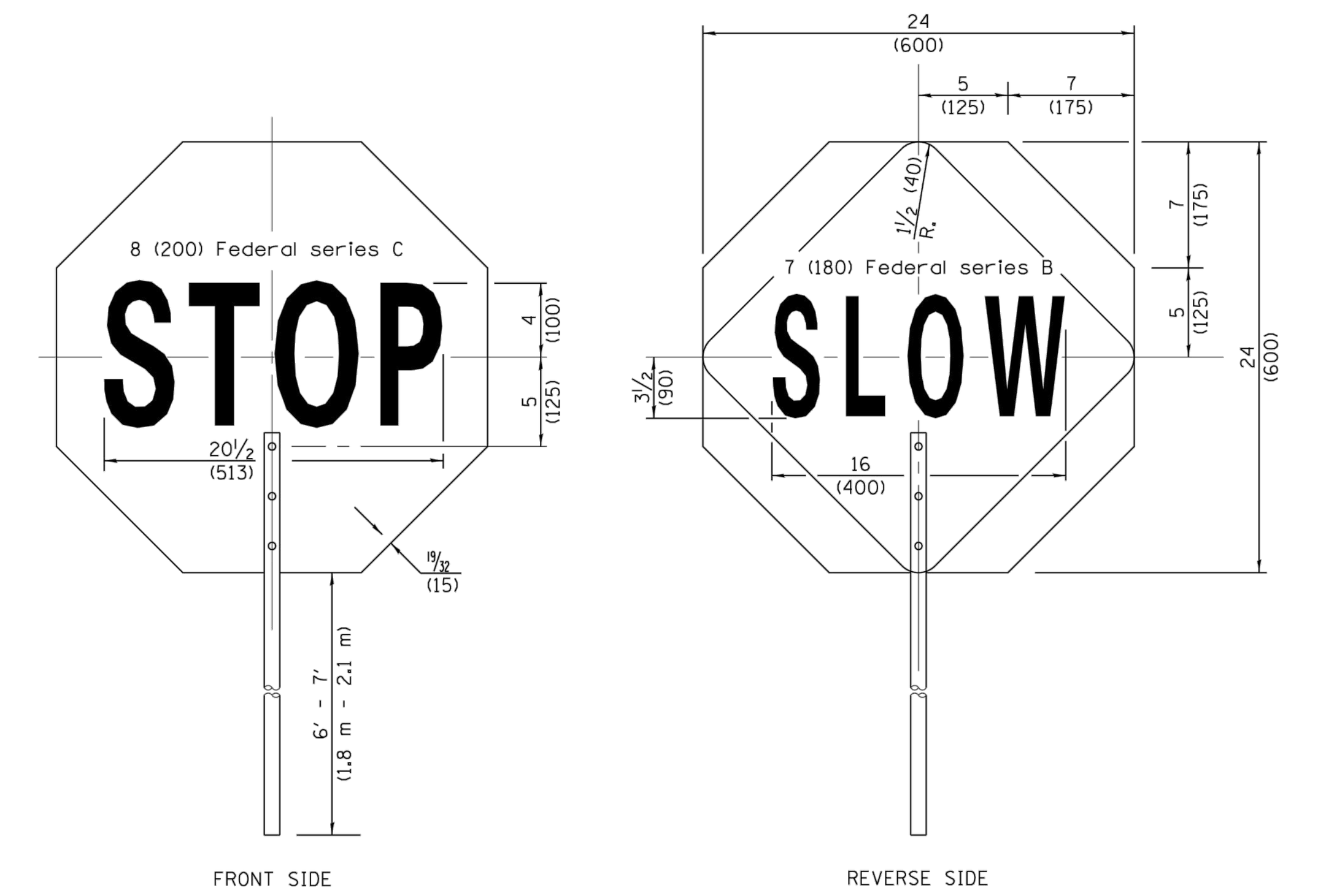
HIGH LEVEL WARNING DEVICE



W12-I103-4848

WIDTH RESTRICTION SIGN

XX'-XX" width and X miles are variable.



FLAGGER TRAFFIC CONTROL SIGN

G20-I104(0)-6036 G20-I105(0)-6024

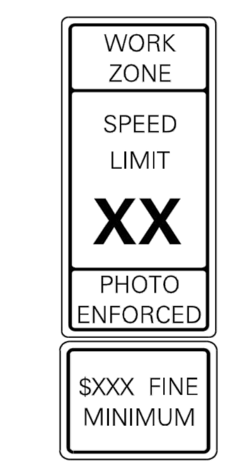
This signing is required for all projects 2 miles (3200 m) or more in length.

ROAD CONSTRUCTION NEXT X MILES sign shall be placed 500' (150 m) in advance of project limits.

END CONSTRUCTION sign shall be erected at the end of the job unless another job is within 2 miles (3200 m).

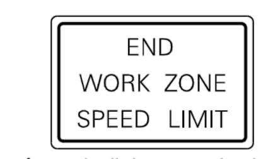
Dual sign displays shall be utilized on multi-lane highways.

WORK LIMIT SIGNING



W21-I115(0)-3618
R2-1-3648
R10-I108p-3618 ••••
R2-I106p-3618

Sign assembly as shown on Standards or as allowed by District Operations.



G20-I103(0)-6036

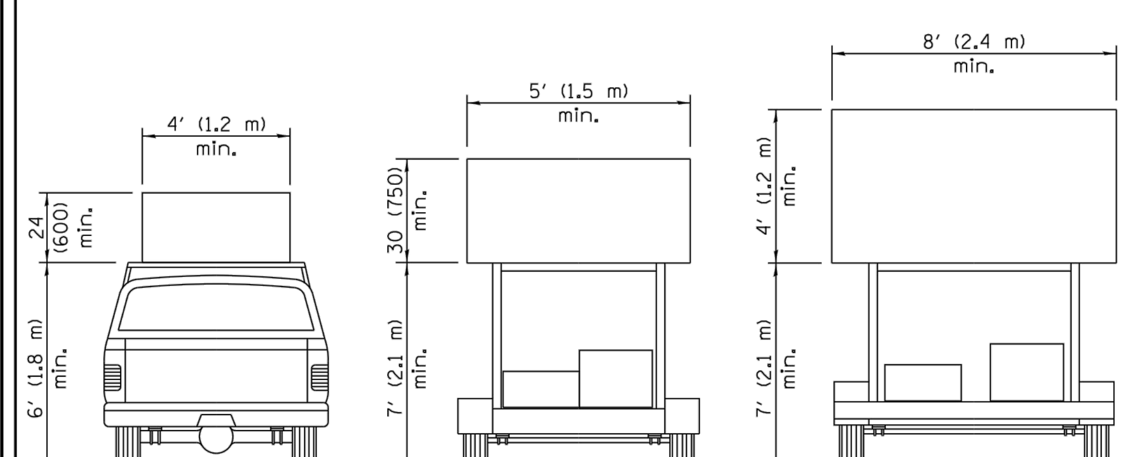
This sign shall be used when the above sign assembly is used.

HIGHWAY CONSTRUCTION SPEED ZONE SIGNS

•••• R10-I108p shall only be used along roadways under the juristiction of the State.

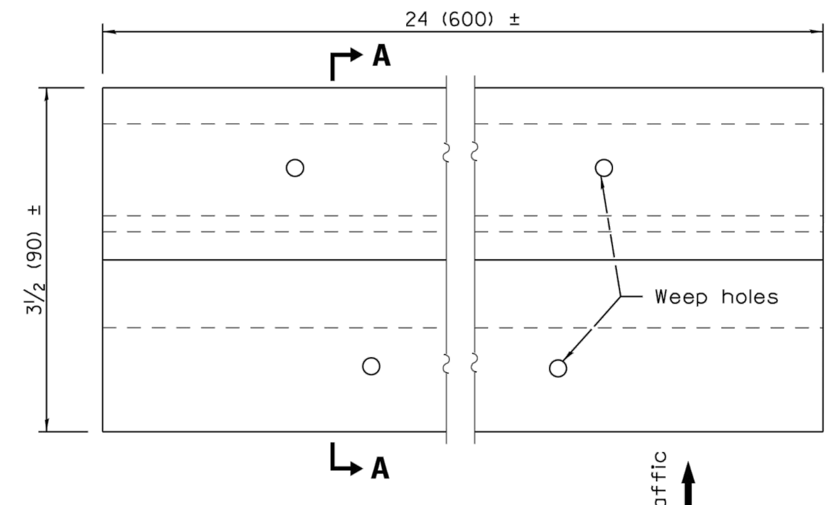
Illinois Department of Transportation
APPROVED January 1, 2017
[illegible]
ENGINEER OF OPERATIONS
APPROVED January 1, 2017
[illegible]
ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

TRAFFIC CONTROL DEVICES
(Sheet 2 of 3)
STANDARD 701901-06

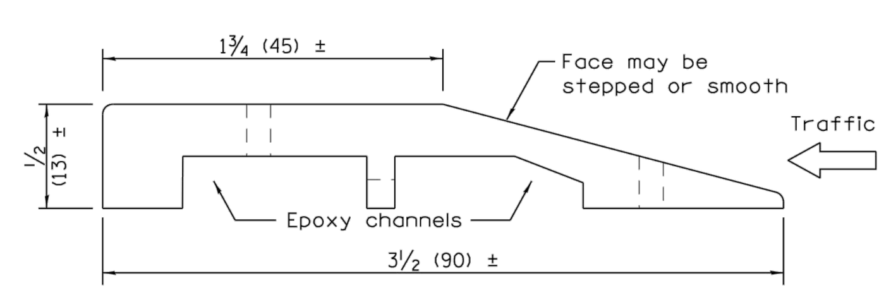


TYPE A ROOF MOUNTED **TYPE B ROOF OR TRAILER MOUNTED** **TYPE C TRAILER MOUNTED**

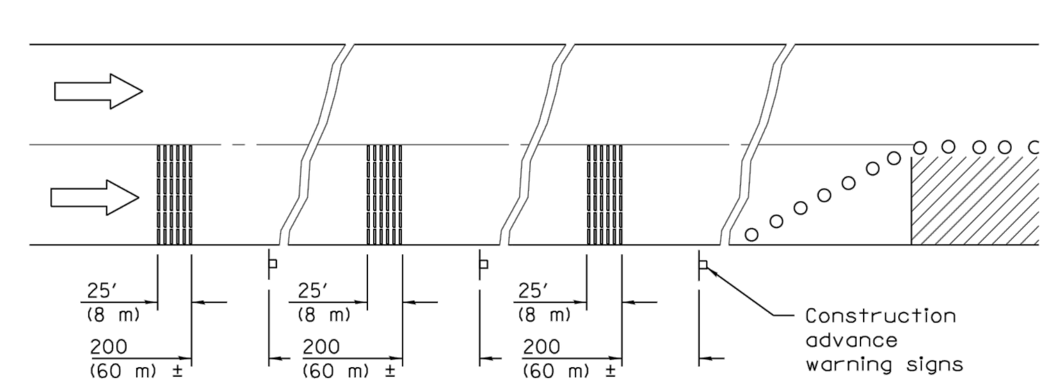
ARROW BOARDS

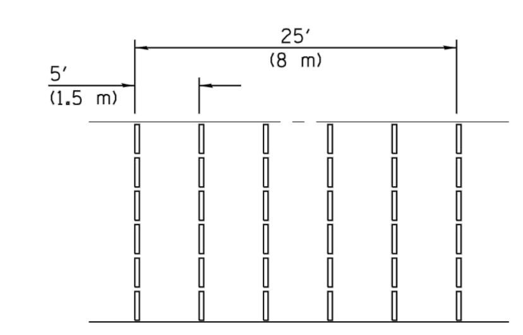


PLAN



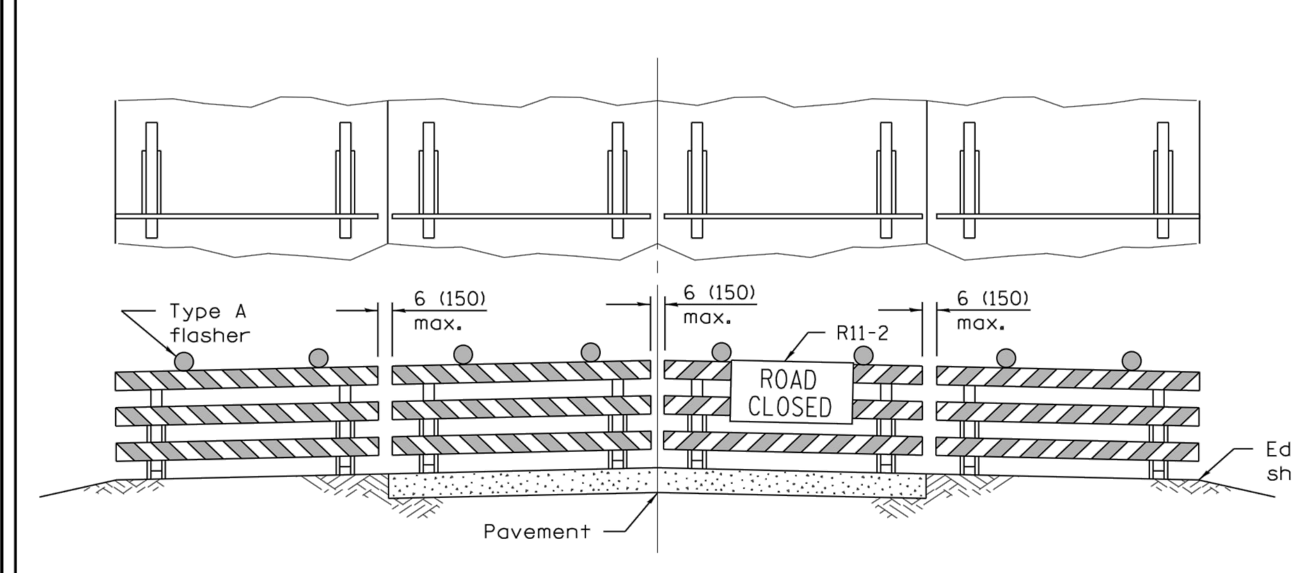
SECTION A-A





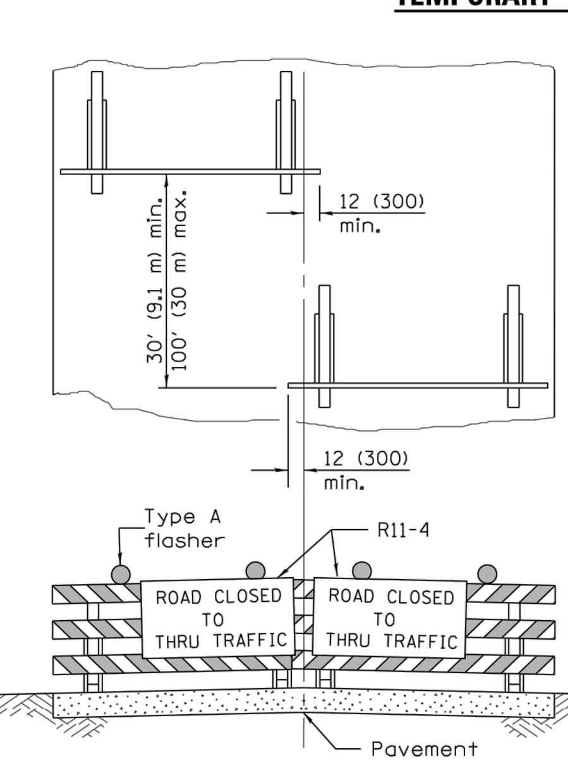
TYPICAL INSTALLATION

TEMPORARY RUMBLE STRIPS



ROAD CLOSED TO ALL TRAFFIC

Reflectorized striping may be omitted on the back side of the barricades. If a Type III barricade with an attached sign panel which meets NCHRP 350 is not available, the sign may be mounted on an NCHRP 350 temporary sign support directly in front of the barricade.



ROAD CLOSED TO THRU TRAFFIC

Reflectorized striping shall appear on both sides of the barricades. If a Type III barricade with an attached sign panel which meets NCHRP 350 is not available, the signs may be mounted on NCHRP 350 temporary sign supports directly in front of the barricade.

TYPICAL APPLICATIONS OF TYPE III BARRICADES CLOSING A ROAD

Illinois Department of Transportation
APPROVED January 1, 2017
[illegible]
ENGINEER OF OPERATIONS
APPROVED January 1, 2017
[illegible]
ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

TRAFFIC CONTROL DEVICES
(Sheet 3 of 3)
STANDARD 701901-06

ADA DETAILS FOR PHASE 1 PROJECTS

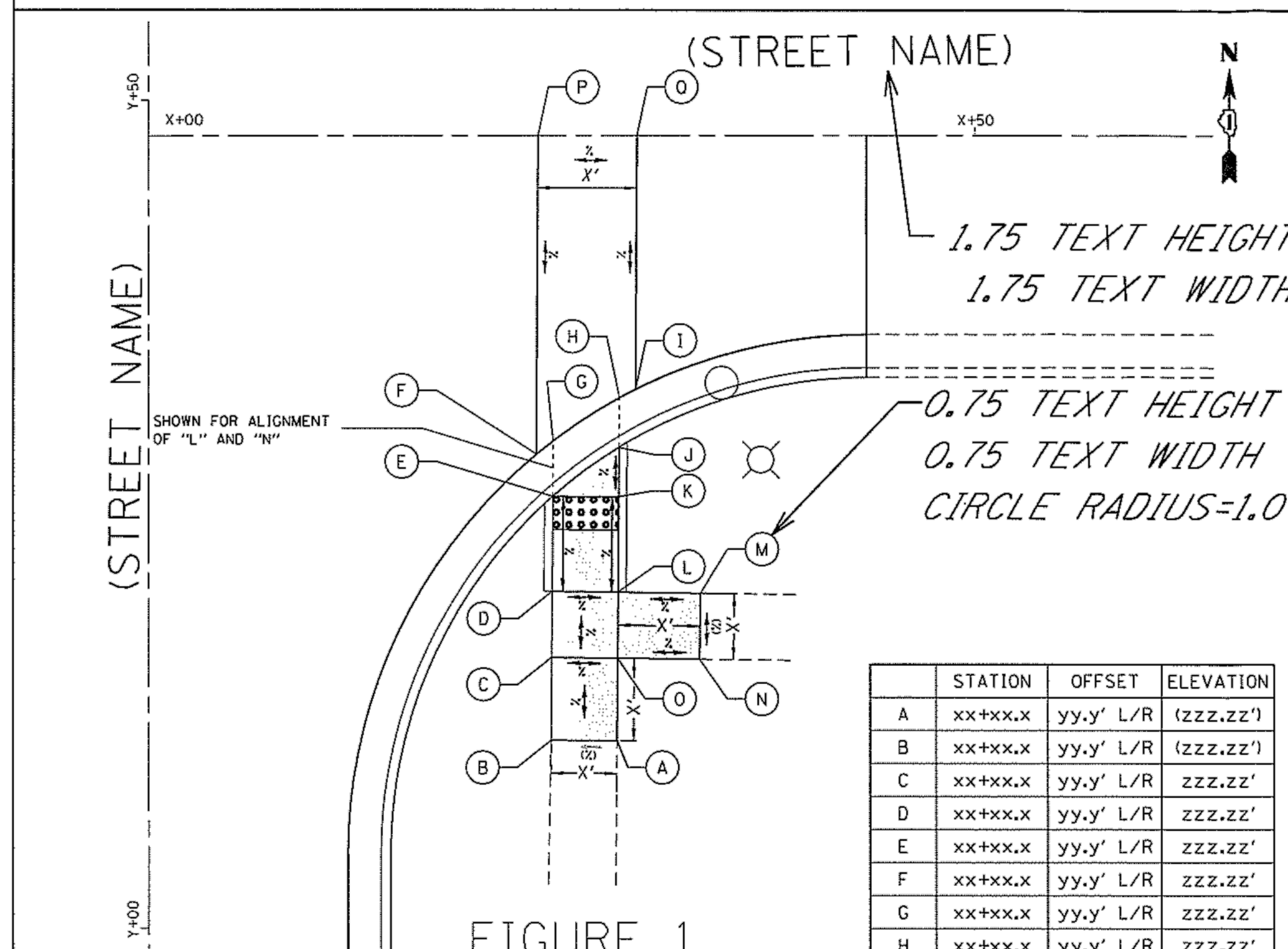


FIGURE 1

	STATION	OFFSET	ELEVATION
A	xx+xx.x	yy.y' L/R	(zzz.zz')
B	xx+xx.x	yy.y' L/R	(zzz.zz')
C	xx+xx.x	yy.y' L/R	zzz.zz'
D	xx+xx.x	yy.y' L/R	zzz.zz'
E	xx+xx.x	yy.y' L/R	zzz.zz'
F	xx+xx.x	yy.y' L/R	zzz.zz'
G	xx+xx.x	yy.y' L/R	zzz.zz'
H	xx+xx.x	yy.y' L/R	zzz.zz'
I	xx+xx.x	yy.y' L/R	zzz.zz'
J	xx+xx.x	yy.y' L/R	zzz.zz'
K	xx+xx.x	yy.y' L/R	zzz.zz'
L	xx+xx.x	yy.y' L/R	zzz.zz'
M	xx+xx.x	yy.y' L/R	zzz.zz'
N	xx+xx.x	yy.y' L/R	zzz.zz'
O	xx+xx.x	yy.y' L/R	zzz.zz'
P	xx+xx.x	yy.y' L/R	(zzz.zz')
Q	xx+xx.x	yy.y' L/R	(zzz.zz')

NOTES:

1.) *THESE ADA DETAILS ARE FOR PRESENTATION PURPOSES. REFER TO THE CURRENT BDE MANUAL AND ADA/PROWAG GUIDELINES FOR DESIGN REQUIREMENTS.*

2.) *FOLLOW LEGEND FOR LABELING EXISTING ELEVATIONS, SLOPES, AND LENGTHS.*

3.) *ESTABLISH STATIONS/OFFSETS BASED ON 1 CENTERLINE FOR EACH CORNER.*

4.) *SHOW EXISTING (PROPOSED) ABOVE GROUND UTILITIES AND SIGNS.*

5.) *ELEVATIONS FOR POINTS (P), (Q), (R), AND (S) SHOULD MATCH WITH THEIR ASSOCIATED PROFILE.*

6.) *IN ORDER TO ALLOW FOR CONSTRUCTION TOLERANCES THE CROSS SLOPES AND RAMP RUNNING SLOPES SHOULD NOT BE DESIGNED TO THEIR MAXIMUM ALLOWABLE UNLESS NECESSARY. INSTEAD ALL CROSS SLOPES SHOULD BE DESIGNED AT 1.5% OR FLATTER WHEREAS RAMP RUNNING SLOPES SHOULD BE DESIGNED AT 1:14 (7.14%) OR FLATTER.*

7.) *SUBMIT DETAILS ON 11"x17" SIZED PLAN SHEETS AND AT A SCALE OF 1"=10'. ONLY 1 OR 2 RADII OF RETURN SHOULD BE PROVIDED PER SHEET.*

8.) *IF PARALLEL SIDEWALK SLOPES DO NOT MATCH, LABEL BOTH SLOPES. FOR EXAMPLE, IN FIGURE 1, IF M-L DOES NOT MATCH N-O BOTH SLOPES SHOULD BE LABELED.*

LEGEND

(xx.xx')	EXISTING LENGTH/ELEVATION
═	PROPOSED SIDE CURB
(%)	EXISTING SLOPE
▭	PROPOSED SIDEWALK
⠿	DETECTABLE WARNINGS
▨	SIDEWALK REMOVAL REPLACE W/TOPSOIL & SOD

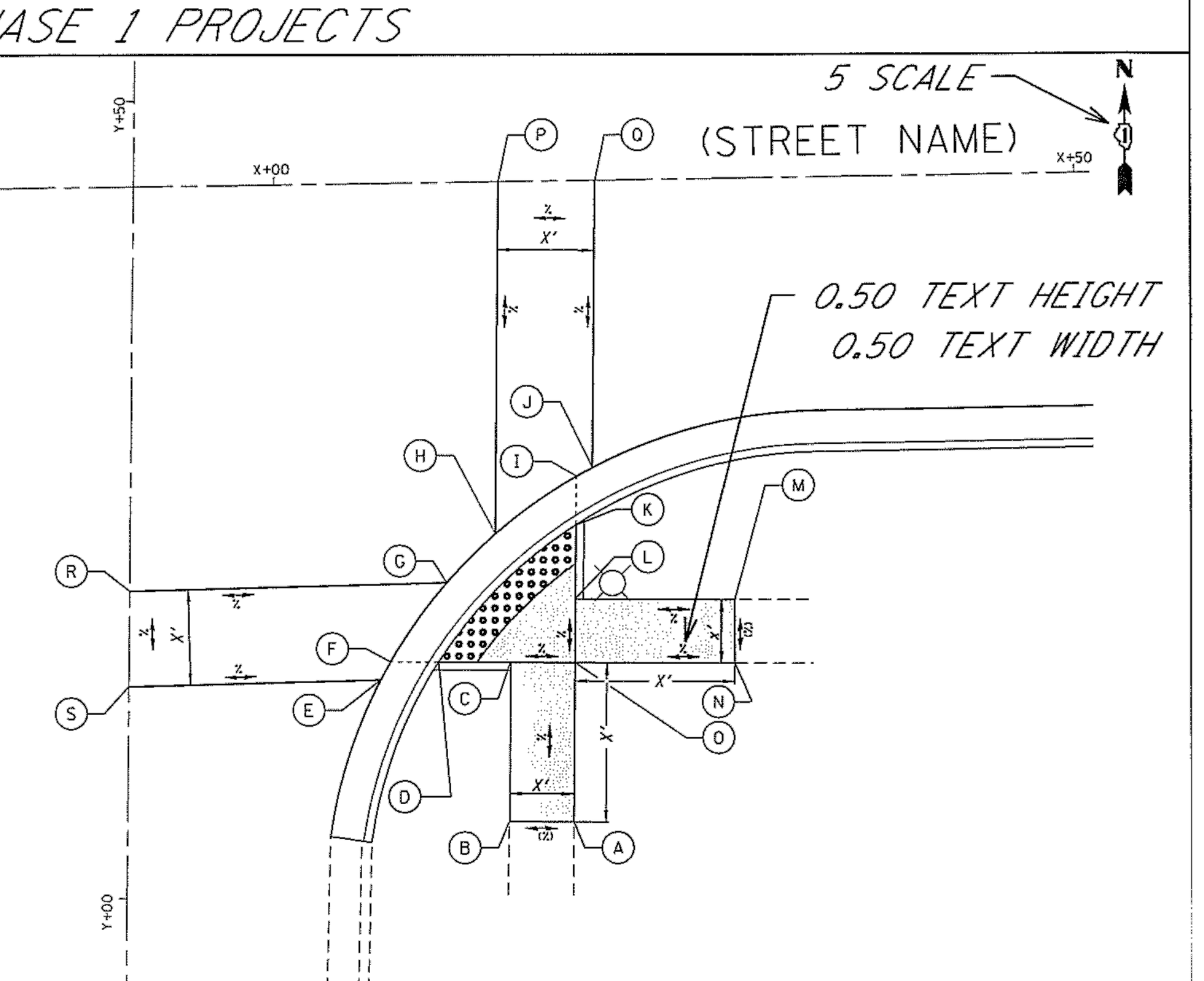


FIGURE 2

	STATION	OFFSET	ELEVATION		STATION	OFFSET	ELEVATION
A	xx+xx.x	yy.y' L/R	(zzz.zz')	L	xx+xx.x	yy.y' L/R	zzz.zz'
B	xx+xx.x	yy.y' L/R	(zzz.zz')	M	xx+xx.x	yy.y' L/R	zzz.zz'
C	xx+xx.x	yy.y' L/R	zzz.zz'	N	xx+xx.x	yy.y' L/R	zzz.zz'
D	xx+xx.x	yy.y' L/R	zzz.zz'	O	xx+xx.x	yy.y' L/R	zzz.zz'
E	xx+xx.x	yy.y' L/R	zzz.zz'	P	xx+xx.x	yy.y' L/R	(zzz.zz')
F	xx+xx.x	yy.y' L/R	zzz.zz'	Q	xx+xx.x	yy.y' L/R	(zzz.zz')
G	xx+xx.x	yy.y' L/R	zzz.zz'	R	xx+xx.x	yy.y' L/R	zzz.zz'
H	xx+xx.x	yy.y' L/R	zzz.zz'	S	xx+xx.x	yy.y' L/R	zzz.zz'
I	xx+xx.x	yy.y' L/R	zzz.zz'				
J	xx+xx.x	yy.y' L/R	zzz.zz'				
K	xx+xx.x	yy.y' L/R	zzz.zz'				

GRAPHIC SCALE
5 0 FEET 5 10 20

BORDER = 5 SCALE
CELLS = 20 SCALE

FILE NAME = S:\WP\p&os\GEO\OsborneN\CADD Projects\ADA Files\ADA Template (Design)\PHASE 1 -Typical Ramp-plan.dgn
Default
USER NAME = osbornenp
PLOT SCALE = 10.0000 ' / in.
PLOT DATE = 10/14/2016
DESIGNED - PLP 10/04/2016
DRAWN - PLP 10/04/2016
CHECKED -
DATE -
REVISED - NO 10/07/2016
REVISED - NO 10/13/2016
REVISED -
REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SCALE: SHEET OF SHEETS STA. TO STA.
F.A. RTE. SECTION COUNTY TOTAL SHEETS SHEET NO.
CONTRACT NO.
ILLINOIS FED. AID PROJECT

DATE	REVISIONS	ISSUE
09-08-2016	PRELIMINARY PLAN	A
10-18-2016	ISSUED FOR PERMIT	1
01-04-2017	REVISED PER VILLAGE COMMENTS	2
01-24-2017	REVISIONS PER MWRD/IDOT COMMENTS	3
03-27-2017	REVISIONS PER MWRD/IDOT COMMENTS	4
05-11-2017	REVISIONS PER MWRD/IEPA/IDOT COMMENTS	5
10-12-2017	REVISIONS PER MWRD COMMENTS-CHANGED DETENTION PIPE TO CONCRETE.	6

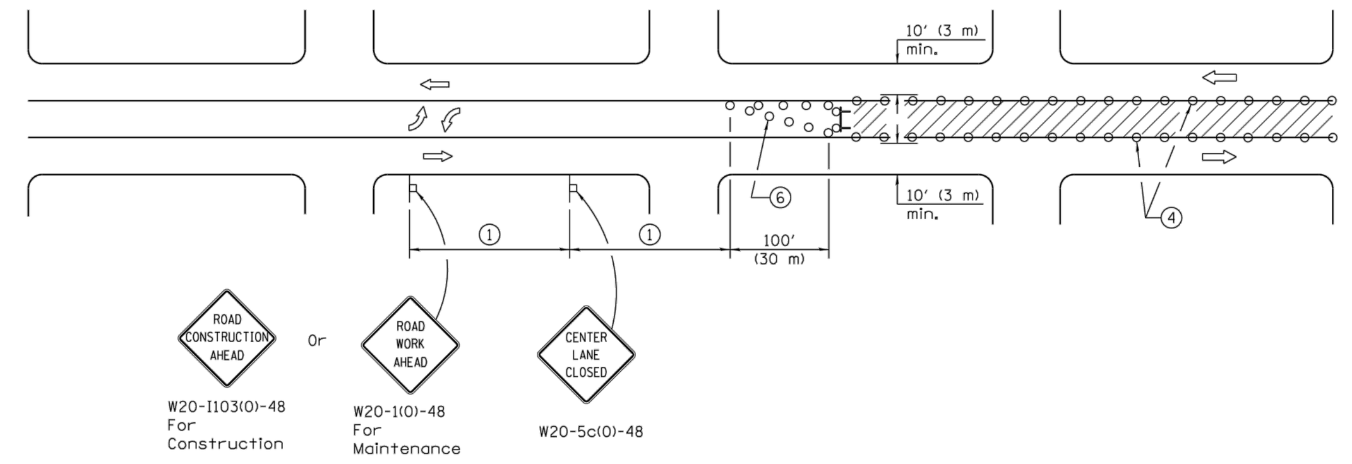
PROJECT STAFF
PROJECT MANAGER: B. BONO P.E.
ENGINEER: A. VEER P.E.
ENGINEER:
TECHNICIAN:

BCI
BONO CONSULTING, INC.
CIVIL ENGINEERS
1018 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH : (847) 823-3300
FAX: (847) 823-3303
bbono@bonoconsulting.com

IDOT HIGHWAY STANDARDS

5 UNIT TOWNHOUSE DEVELOPMENT
8163 N. LINCOLN, SKOKIE, ILLINOIS

PROJECT NUMBER: 16189
START DATE: AUG 28, 2016
GRAPHIC SCALE
0
SCALE: NTS



CASE I
(Signs required for both directions)

SIGN SPACING	
Posted Speed	Sign Spacing
55	500' (150 m)
50-45	350' (100 m)
<45	200' (60 m)

SYMBOLS

▨ Work area
Barricade or drum with flashing light
● Flagger with traffic control sign
○ Cone, drum or barricade (Cones for daytime use only)
Sign on portable or permanent support
Type III barricade with flashing lights

1. Refer to SIGN SPACING TABLE for distances.
2. Required for speeds > 40 mph (70 km/h).
3. Required if work exceeds 500' (164 m) or 1 block.
4. Cones at 25' (8 m) centers for 250' (75 m) on approach. Additional cones may be placed at 50' (15 m) centers. When drums or type I or II barricades are used, the interval between devices may be doubled.
5. For approved sideroad closures.
6. Cones, drums or barricades at 20' (6 m) centers in taper.
7. Use flagger sign only when flagger is present.

GENERAL NOTES

This Standard is used to close one lane of an urban, two lane, two way roadway with a bidirectional turn lane.

Case I applies when no workers are present. When workers are present, two lanes shall be closed and traffic control shall be according to Standard 701501.

Calculate L as follows:

SPEED LIMIT	FORMULAS English	(Metric)
40 mph (70 km/h) or less:	$L=\frac{WS^2}{60}$	$L=\frac{WS^2}{150}$
45 mph (80 km/h) or greater:	L=(W)(S)	L=0.65(W)(S)

W = Width of offset in feet (meters).

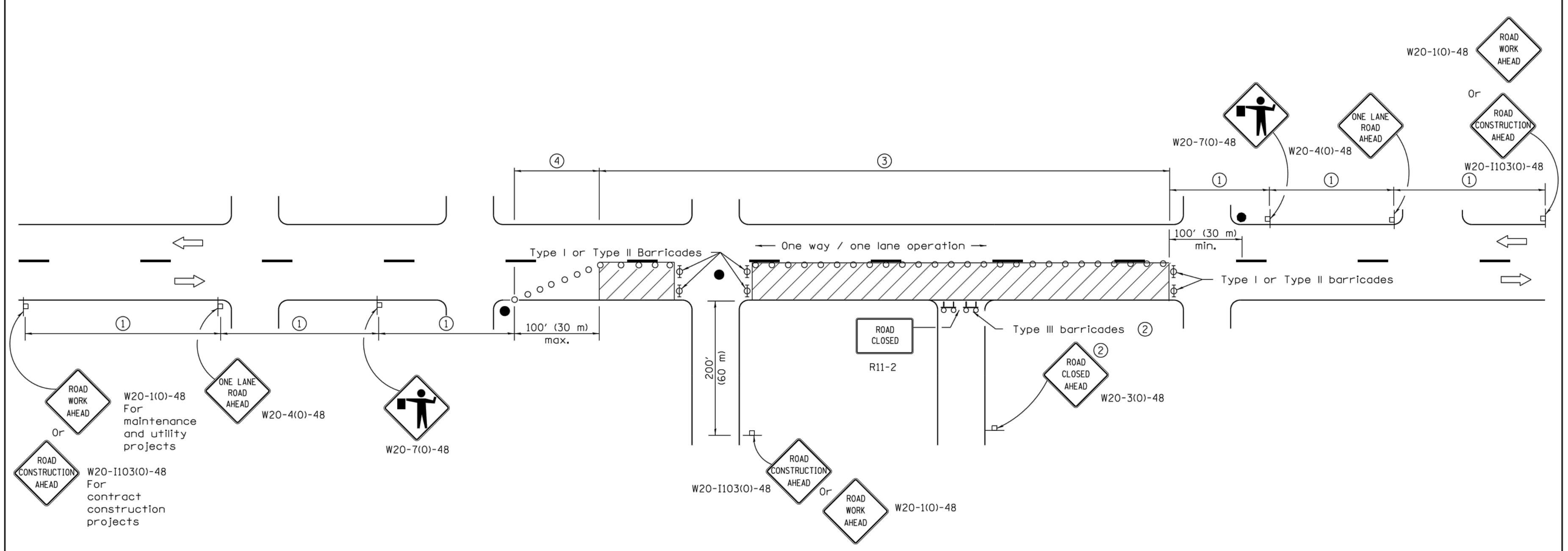
S = Normal posted speed mph (km/h).

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation
APPROVED January 1, 2017
ENGINEER OF SAFETY PROG. AND ENGINEERING
APPROVED January 1, 2017
ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-01

DATE	REVISIONS
1-1-17	Added flashing lights to Type III barr. Revised dev. & sign spacing, TWLTL taper length.
1-1-14	Omitted original note ④. Rev. workers sign no. to agree with current MUTCD.

URBAN LANE CLOSURE, 2L, 2W, WITH BIDIRECTIONAL LEFT TURN LANE
(Sheet 1 of 2)
STANDARD 701502-07


W20-1(0)-48
ROAD WORK AHEAD
Or
ROAD CONSTRUCTION AHEAD
W20-I103(0)-48
W20-7(0)-48
ONE LANE ROAD AHEAD
W20-4(0)-48
100' (30 m) min.
Type I or Type II barricades
One way / one lane operation
Type I or Type II Barricades
100' (30 m) max.
200' (60 m)
ROAD CLOSED
R11-2
Type III barricades
ROAD CLOSED AHEAD
W20-3(0)-48
W20-1(0)-48 For maintenance and utility projects
W20-I103(0)-48 For contract construction projects

SIGN SPACING	
Posted Speed	Sign Spacing
55	500' (150 m)
50-45	350' (100 m)
<45	200' (60 m)

SYMBOLS

▨ Work area
○ Cone, drum or barricade (not required for moving operations)
Sign on portable or permanent support
● Flagger with traffic control sign
Barricade or drum with flashing light
Type III barricade with flashing lights

1. Refer to SIGN SPACING TABLE for distances.
2. For approved sideroad closures.
3. Cones at 25' (8 m) centers for 250' (75 m). Additional cones may be placed at 50' (15 m) centers. When drums or Type I or Type II barricades are used, the interval between devices may be doubled.
4. Cones, drums or barricades at 20' (6 m) centers.

GENERAL NOTES

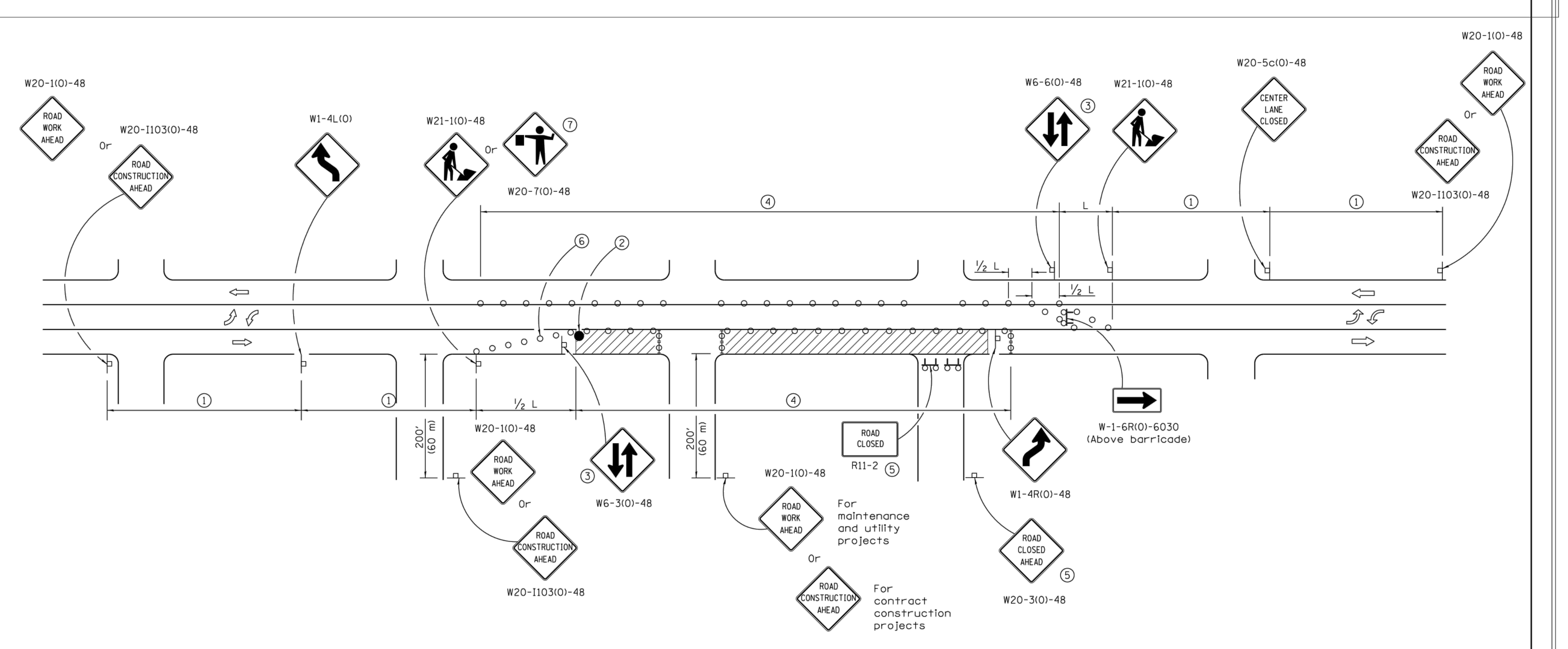
This Standard is used where at any time, day or night, any vehicle, equipment, workers or their activities encroach on the pavement requiring the closure of one traffic lane in an urban area.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation
APPROVED January 1, 2011
ENGINEER OF SAFETY ENGINEERING
APPROVED January 1, 2011
ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

DATE	REVISIONS
1-1-11	Revised flagger sign.
1-1-09	Switched units to English (metric). Corrected sign No.'s.

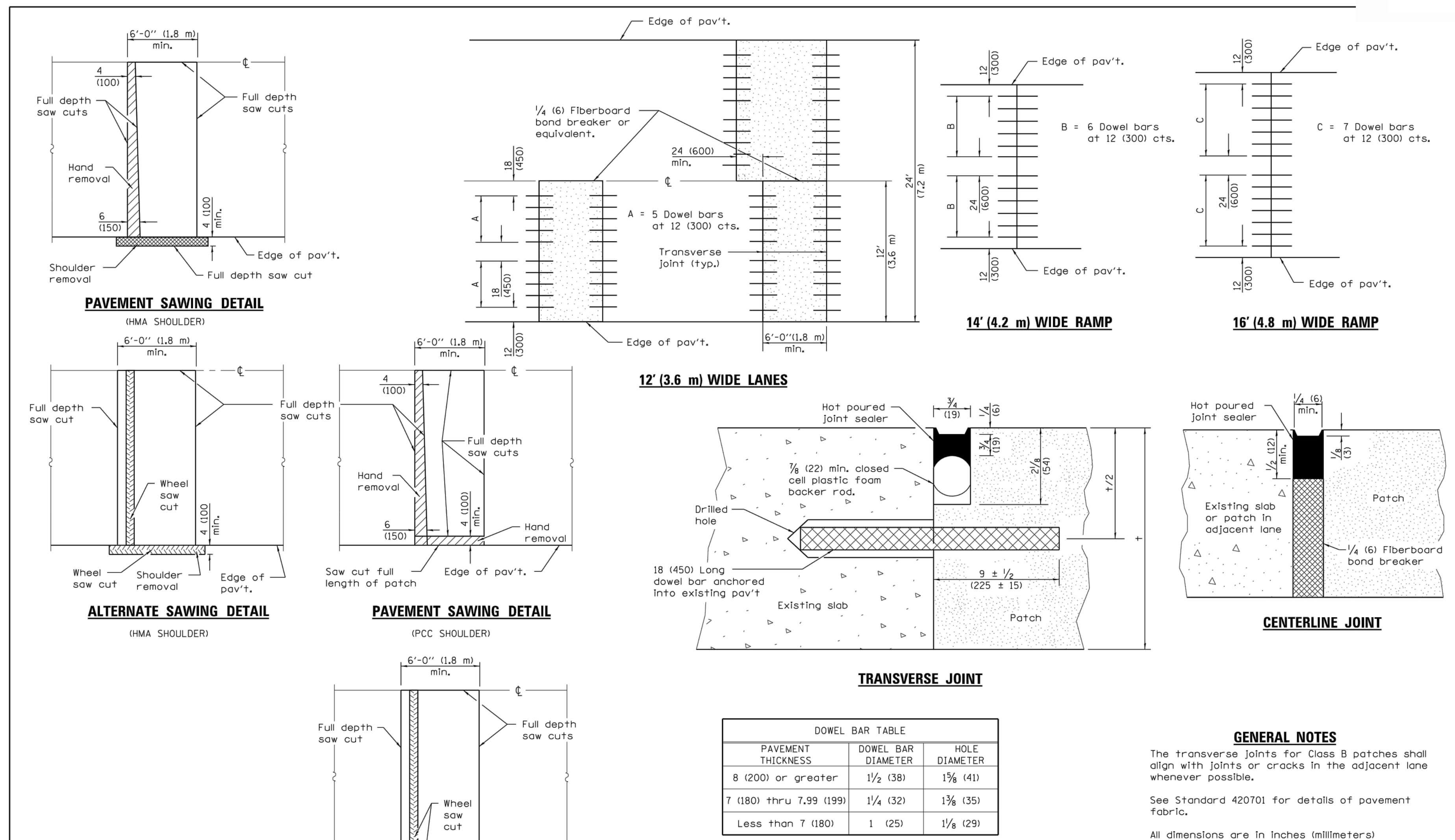
URBAN LANE CLOSURE, 2L, 2W, UNDIVIDED
STANDARD 701501-06


W20-1(0)-48
ROAD WORK AHEAD
Or
W20-I103(0)-48
ROAD CONSTRUCTION AHEAD
W1-4L(0)
W21-1(0)-48
W20-7(0)-48
W6-6(0)-48
W21-1(0)-48
W20-5c(0)-48
CENTER LANE CLOSED
W20-1(0)-48
W20-I103(0)-48
½ L
L
W20-1(0)-48
W6-3(0)-48
W20-I103(0)-48
200' (60 m)
ROAD CLOSED
R11-2
W-1-6R(0)-6030 (Above barricade)
W1-4R(0)-48
ROAD CLOSED AHEAD
W20-3(0)-48
For maintenance and utility projects
For contract construction projects
W20-I103(0)-48

CASE II

Illinois Department of Transportation
APPROVED January 1, 2017
ENGINEER OF SAFETY PROG. AND ENGINEERING
APPROVED January 1, 2017
ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-01

URBAN LANE CLOSURE, 2L, 2W, WITH BIDIRECTIONAL LEFT TURN LANE
(Sheet 2 of 2)
STANDARD 701502-07


PAVEMENT SAWING DETAIL
(HMA SHOULDER)
ALTERNATE SAWING DETAIL
(HMA SHOULDER)
PAVEMENT SAWING DETAIL
(PCC SHOULDER)
ALTERNATE SAWING DETAIL
(PCC SHOULDER)
6'-0" (1.8 m) min.
Full depth saw cuts
Hand removal
Shoulder removal
Edge of pav't.
Full depth saw cut
Wheel saw cut
Saw cut full length of patch
¼ (6) Fiberboard bond breaker or equivalent.
24 (600) min.
A = 5 Dowel bars at 12 (300) cts.
Transverse joint (typ.)
12' (3.6 m) WIDE LANES
B = 6 Dowel bars at 12 (300) cts.
14' (4.2 m) WIDE RAMP
C = 7 Dowel bars at 12 (300) cts.
16' (4.8 m) WIDE RAMP
Hot poured joint sealer
⅞ (22) min. closed cell plastic foam backer rod.
Drilled hole
18 (450) Long dowel bar anchored into existing pav't
Existing slab
Patch
9 ± ½ (225 ± 15)
TRANSVERSE JOINT
Existing slab or patch in adjacent lane
¼ (6) Fiberboard bond breaker
CENTERLINE JOINT

DOWEL BAR TABLE		
PAVEMENT THICKNESS	DOWEL BAR DIAMETER	HOLE DIAMETER
8 (200) or greater	1½ (38)	1⅝ (41)
7 (180) thru 7.99 (199)	1¼ (32)	1⅜ (35)
Less than 7 (180)	1 (25)	1⅛ (29)

GENERAL NOTES

The transverse joints for Class B patches shall align with joints or cracks in the adjacent lane whenever possible.

See Standard 420701 for details of pavement fabric.

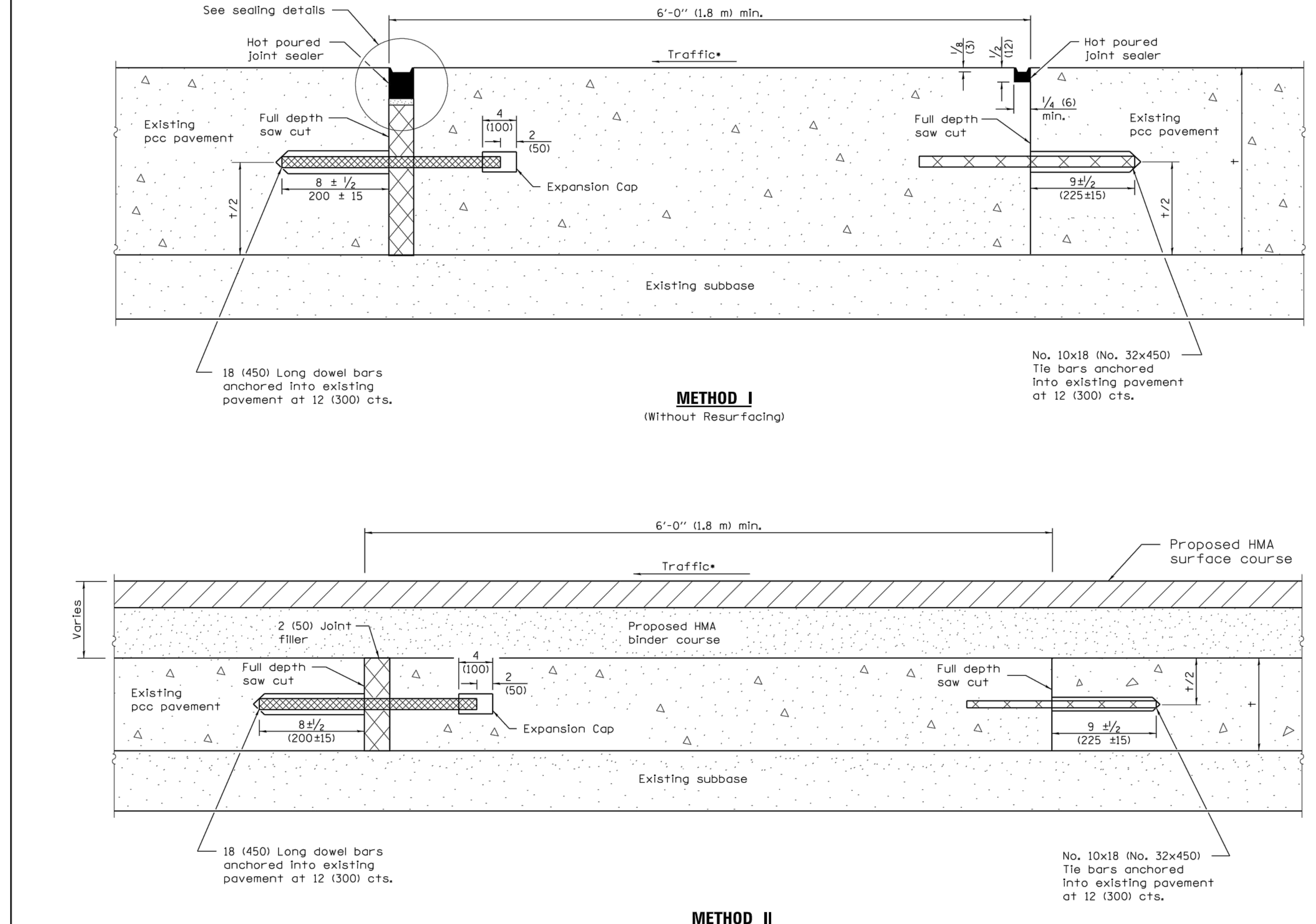
All dimensions are in inches (millimeters) unless otherwise shown.

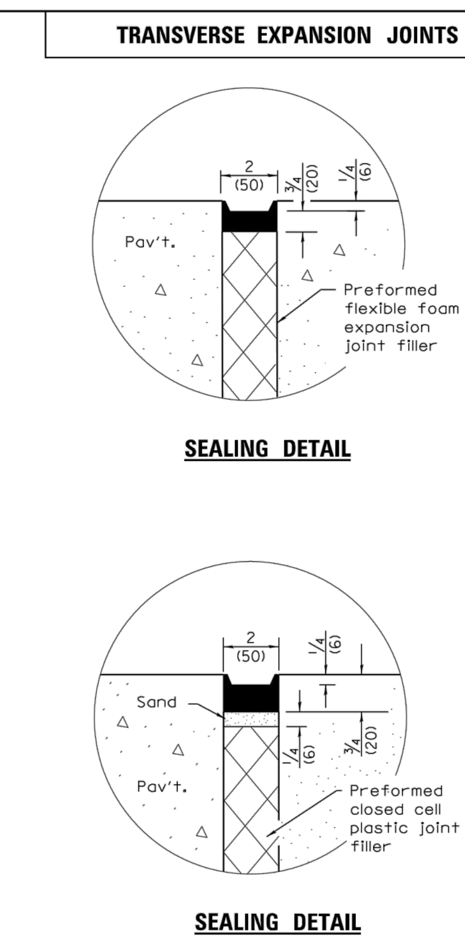
Illinois Department of Transportation
PASSED January 1, 2008
ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2008
ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

DATE	REVISIONS
1-1-08	Switched units to English (metric).
1-1-07	Revised General Notes.

CLASS B PATCHES
(Sheet 1 of 2)
STANDARD 442101-07

TRANSVERSE EXPANSION JOINTS


See sealing details
Hot poured joint sealer
6'-0" (1.8 m) min.
Traffic
Existing pcc pavement
Full depth saw cut
Expansion Cap
8 ± ½ 200 ± 15
9±½ (225±15)
Existing subbase
18 (450) Long dowel bars anchored into existing pavement at 12 (300) cts.
No. 10x18 (No. 32x450) Tie bars anchored into existing pavement at 12 (300) cts.
METHOD I
(Without Resurfacing)
Proposed HMA surface course
Proposed HMA binder course
2 (50) Joint filler
Varies
METHOD II
(With Resurfacing)



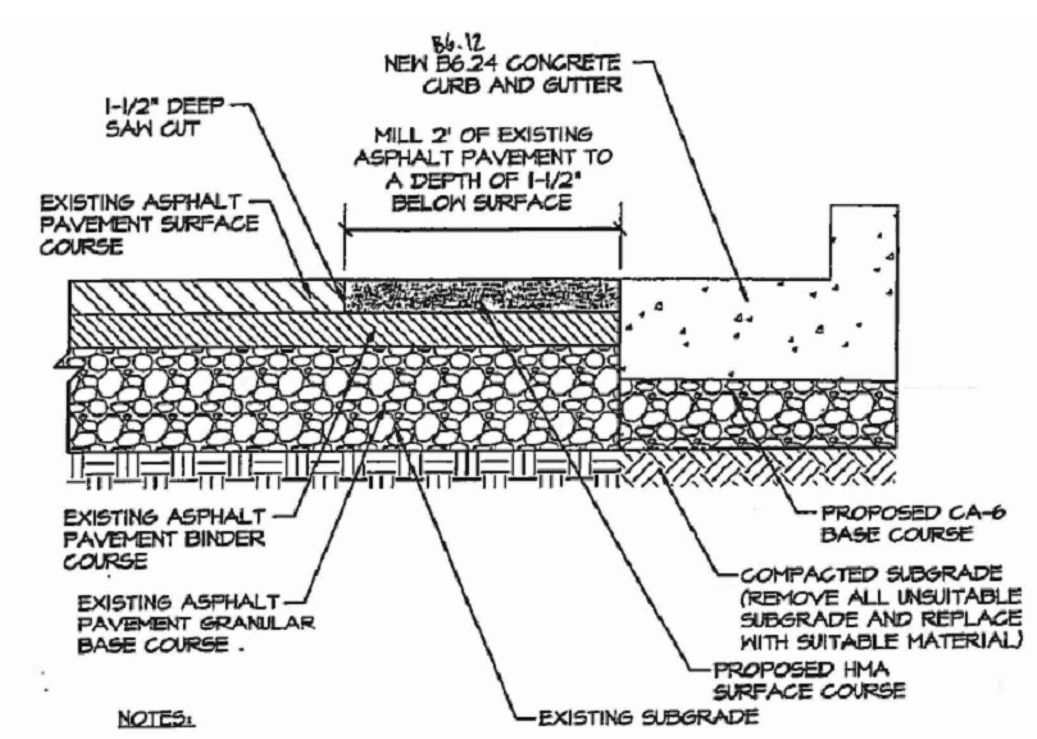
NOTE

- When re-establishing a transverse expansion joint on a two-lane, two-way road, reverse the orientation of the dowel bars with respect to traffic for one of the patches such that the joint will be continuous across both lanes.

Illinois Department of Transportation
PASSED January 1, 2008
ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2008
ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

CLASS B PATCHES
(Sheet 2 of 2)
STANDARD 442101-07

PAVEMENT PATCHING
AT CURB & GUTTER REMOVAL
NOT TO SCALE


B6.12
NEW B6.24 CONCRETE CURB AND GUTTER
1-1/2" DEEP SAW CUT
MILL 2' OF EXISTING ASPHALT PAVEMENT TO A DEPTH OF 1-1/2" BELOW SURFACE
EXISTING ASPHALT PAVEMENT SURFACE COURSE
EXISTING ASPHALT PAVEMENT BINDER COURSE
EXISTING ASPHALT PAVEMENT GRANULAR BASE COURSE.
PROPOSED CA-6 BASE COURSE
COMPACTED SUBGRADE (REMOVE ALL UNSUITABLE SUBGRADE AND REPLACE WITH SUITABLE MATERIAL)
PROPOSED HMA SURFACE COURSE
EXISTING SUBGRADE

NOTES:

1. EXISTING PAVEMENT SECTION IS SHOWN FOR REFERENCE ONLY.
2. ALL ASPHALT PAVEMENT MILLINGS SHALL BE DISPOSED OF BY THE CONTRACTOR.
3. BITUMINOUS TACK COAT SHALL BE APPLIED AT A RATE OF 0.1 GALLONS PER SQUARE YARD TO BOTH THE EXISTING AND PROPOSED ASPHALT BINDER COURSE PRIOR TO NEW HMA SURFACE COURSE INSTALLATION.

DETAIL
NOT TO SCALE

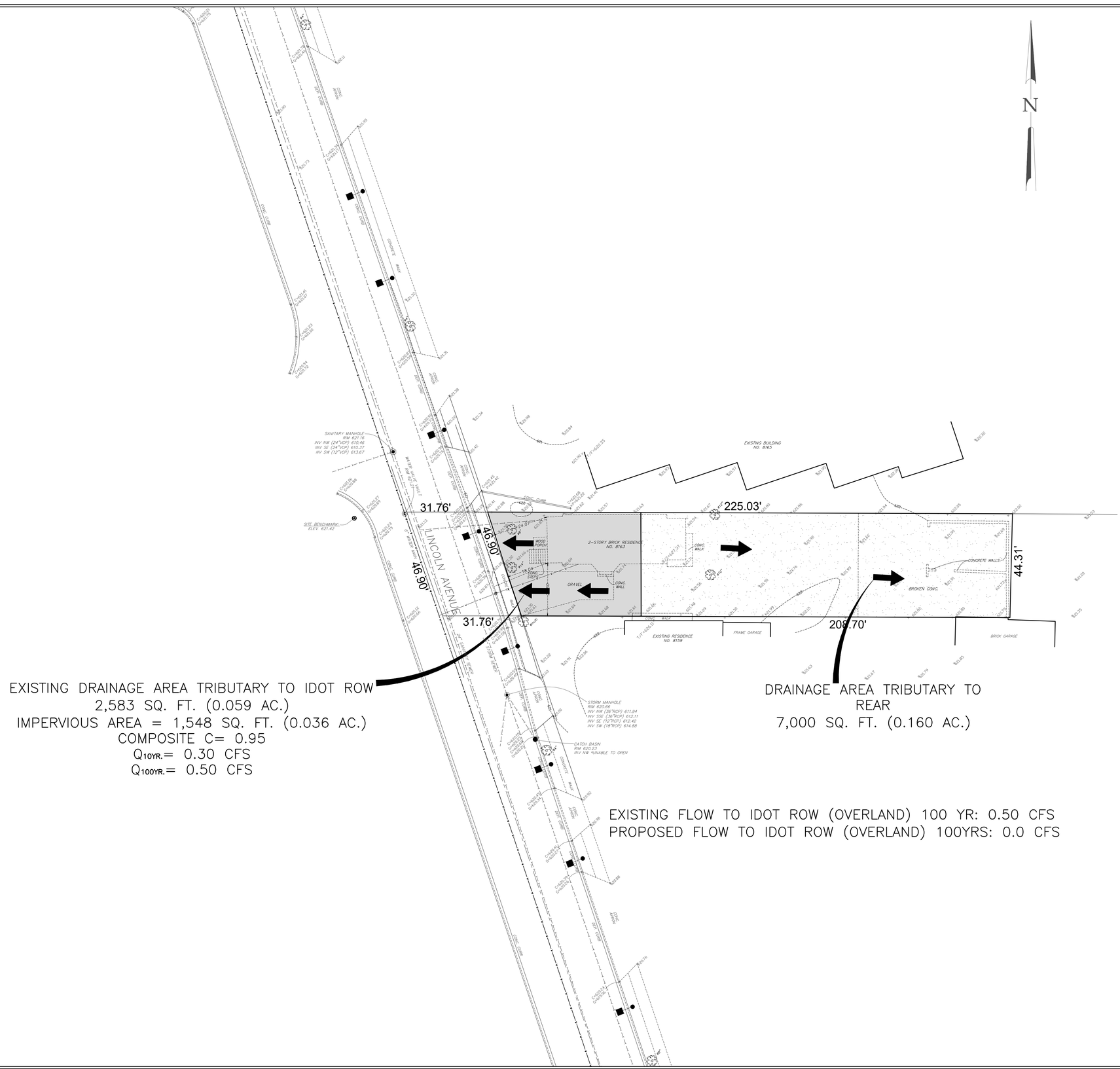
PROJECT STAFF		ISSUE	REVISIONS	DATE
PROJECT MANAGER:	B. BONO P.E.	A	PRELIMINARY PLAN	09-08-2016
ENGINEER:	A. VEER P.E.	1	ISSUED FOR PERMIT	10-18-2016
ENGINEER:		2	REVISED PER VILLAGE COMMENTS	01-04-2017
TECHNICIAN:		3	REVISIONS PER MWRD/IDOT COMMENTS	01-24-2017
		4	REVISIONS PER MWRD/IDOT COMMENTS	03-27-2017
		5	REVISIONS PER MWRD/IEPA/IDOT COMMENTS	05-11-2017
		6	REVISIONS PER MWRD COMMENTS-CHANGED DETENTION PIPE TO CONCRETE.	10-12-2017

BONO CONSULTING, INC.
CIVIL ENGINEERS
1018 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH : (847) 823-3300
FAX: (847) 823-3303
bbono@bonoconsulting.com

IDOT HIGHWAY STANDARDS

5 UNIT TOWNHOUSE DEVELOPMENT
8163 N. LINCOLN, SKOKIE, ILLINOIS

PROJECT NUMBER: 16189
START DATE: AUG 28, 2016
GRAPHIC SCALE
0
SCALE: NTS
SHEET NUMBER



STORMWATER DETENTION CALCULATIONS

NORTHEAST ILLINOIS

(Illinois State Water Survey Bulletin #70 Rainfall Data)

Outflow Rate (Based on existing conditions)

Tributary Drainage Area			Diverted Drainage Area		
Area =	0.059	acres	Area =		acres
c =	0.76		c =		

RAINFALL INTENSITY (i)			TIME OF CONCENTRATION (Tc)		EXISTING DISCHARGE (Qo)		
i(10) =	6.12	in/hr			Q10 =	0.3	cfs
i(50) =	8.86	in/hr			Q50 =	0.4	cfs
i(100)=	10.38	in/hr	8.5	minutes	Q100=	0.5	cfs

DETENTION VOLUME REQUIRED

10 YEAR		50 YEAR		100 YEAR	
18	cubic ft	42	cubic ft	36	cubic ft
	acre ft		acre ft		acre ft

Proposed Runoff Factor	Storm Duration	Rainfall Intensity	Drainage Area	*Inflow Rate	Outflow Rate	Storage Rate	Stormwater Detention Volume Required
c	t (min)	i (in/hr)	a (acres)	Qi = cia (cfs)	Qo (cfs)	Qi - Qo (cfs)	60(Qi-Qo)(t) (cu. ft.)
10 YEAR FREQUENCY							
0.94	5	6.48	0.06	0.36	0.30	0.06	18
0.94	10	5.88	0.06	0.33	0.30	0.03	18
0.94	15	4.84	0.06	0.27	0.30		
0.94	20	4.22	0.06	0.23	0.30		
0.94	25	3.75	0.06	0.21	0.30		
0.94	30	3.30	0.06	0.18	0.30		
0.94	40	2.75	0.06	0.15	0.30		
0.94	50	2.40	0.06	0.13	0.30		
0.94	60	2.10	0.06	0.12	0.30		
0.94	120	1.32	0.06	0.07	0.30		
0.94	180	0.94	0.06	0.05	0.30		
0.94	360	0.57	0.06	0.03	0.30		
50 YEAR FREQUENCY							
0.94	5	9.36	0.06	0.52	0.40	0.12	36
0.94	10	8.52	0.06	0.47	0.40	0.07	42
0.94	15	7.00	0.06	0.39	0.40		
0.94	20	6.20	0.06	0.34	0.40		
0.94	25	5.40	0.06	0.30	0.40		
0.94	30	4.78	0.06	0.27	0.40		
0.94	40	3.80	0.06	0.21	0.40		
0.94	50	3.40	0.06	0.19	0.40		
0.94	60	3.04	0.06	0.17	0.40		
0.94	120	1.91	0.06	0.11	0.40		
0.94	180	1.37	0.06	0.08	0.40		
0.94	360	0.82	0.06	0.05	0.40		
100 YEAR FREQUENCY							
0.94	5	10.92	0.06	0.61	0.50	0.11	33
0.94	10	10.02	0.06	0.56	0.50	0.06	36
0.94	15	8.20	0.06	0.45	0.50		
0.94	20	7.10	0.06	0.39	0.50		
0.94	25	6.30	0.06	0.35	0.50		
0.94	30	5.60	0.06	0.31	0.50		
0.94	40	4.60	0.06	0.26	0.50		
0.94	50	4.00	0.06	0.22	0.50		
0.94	60	3.56	0.06	0.20	0.50		
0.94	120	2.24	0.06	0.12	0.50		
0.94	180	1.60	0.06	0.09	0.50		
0.94	360	0.97	0.06	0.05	0.50		

* Qi = i(CA + CdAd) when diversions are involved / if diversion is away from outlet, then + becomes -

REVISIONS	DATE
PRELIMINARY PLAN	09-06-2016
ISSUED FOR PERMIT	10-18-2016
REVISED PER VILLAGE COMMENTS	01-04-2017
REVISIONS PER MWRDGOT COMMENTS	01-24-2017
REVISIONS PER MWRDGOT COMMENTS	03-27-2017
REVISIONS PER MWRD COMMENTS	05-11-2017
REVISIONS PER MWRD COMMENTS-CHANGED DETENTION PIPE TO CONCRETE	10-12-2017

PROJECT STAFF

ISSUE

PROJECT MANAGER: B. BONO P.E. A

ENGINEER: A. VEER P.E. 1

ENGINEER: 2

TECHNICIAN: 3

4

5

6

BCI
BONO CONSULTING, INC.
CIVIL ENGINEERS
1018 BUSSE HIGHWAY
PARK RIDGE, IL 60068
PH : (847) 823-3300
FAX: (847) 823-3303
bono@bonoconsulting.com

IDOT DRAINAGE EXHIBIT

5 UNIT TOWNHOUSE DEVELOPMENT
8163 N. LINCOLN, SKOKIE, ILLINOIS

PROJECT NUMBER: 16189

START DATE: AUG 28, 2016

GRAPHIC SCALE
20 0 20

SCALE: 1"=20'-0

SHEET NUMBER
11 OF 11