



City of Detroit  
Inter-Departmental Communication

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**TO:** Richard Doherty, City Engineer  
City Engineering/Department of Public Works

**FROM:** Debra Singleton, Engineer  
Detroit Water and Sewerage Department

**DATE:** February 8, 2018

**RE:** Petition No. 1502  
Requested Encroachment Into Woodward From 500-650 Woodward (With  
Streetscape Improvements)

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We have reviewed the above Petition received by this office. With regard to DWSD's interests, our comments are as follows:

- DWSD has water mains and sewers in the area of the requested encroachments. DWSD has no objections to the requested encroachments provided that the attached provisions for encroachment are strictly followed.

If you have any questions, please call me at (313) 267-8309 or Mohammed Fa Siddique at (313)-964-9245.

Sincerely,

Debra Singleton  
Engineer  
Permits

DS/MS/gl

Attachments

CC: Mohamad Farhat, CSF

Michael Duggan, Mayor

City of Detroit  
**City Engineering Division, Department of Public Works**  
**Survey Bureau**

**NOTICE OF PROPOSED CHANGE IN PROPERTY**

Date: 10/30/2017

Petition: x1502

- |  |  |
|--|--|
| <input type="checkbox"/> AT&T Telecommunication            | <input type="checkbox"/> Berm Use                |
| <input type="checkbox"/> Comcast Television (CATV)         | <input type="checkbox"/> Conversion to Easement  |
| <input type="checkbox"/> Detroit Edison (DTE)              | <input type="checkbox"/> Dedication              |
| <input type="checkbox"/> Fire Department                   | <input checked="" type="checkbox"/> Encroachment |
| <input type="checkbox"/> Great Lakes Water Authority       | <input type="checkbox"/> Outright Vacation       |
| <input type="checkbox"/> Land Bank Authority               | <input type="checkbox"/> Temporary Closing       |
| <input type="checkbox"/> Michcon (DTE)                     |  |
| <input type="checkbox"/> Planning & Development Department |  |
| <input type="checkbox"/> Public Lighting Authority         |  |
| <input type="checkbox"/> Public Lighting Department        |  |
| <input type="checkbox"/> Police Department                 |  |
| <input type="checkbox"/> Solid Waste Division, DPW         |  |
| <input type="checkbox"/> Street Design Bureau, DPW         |  |
| <input type="checkbox"/> Street Maintenance Division, DPW  |  |
| <input type="checkbox"/> Traffic Engineering Division, DPW |  |
| <input type="checkbox"/> Water and Sewerage Department     |  |
| <input type="checkbox"/> _____                             |  |

A petition drawing is attached. Property shown on the attached print is proposed to be changed as indicated. Kindly report (using the back of this sheet) the nature of your services, if any affected by the proposed change and the estimated costs of removing and rerouting such services (if necessary).

Please return one copy to City Engineering Division, DPW within two weeks of the submittal date. Retain one copy and print for you file.

Ron Brundidge, Director, Department of Public Works

By: Richard Doherty, CED DPW  
City Engineer

**TO: City Engineering Division, DPW  
2 Woodward Ave., Suite 642  
Detroit, Michigan 48226-3462  
Survey Bureau: 313-224-3970**

**Petition: x1502**

The proposed change in property (referred to on the other side of this sheet) would affect our services as follows:

- Not Involved
  
- Involved; but asking you to hold action on this petition until further notice.
  
- Involved; but no objections to the property change.
  
- Involved; objection to the property change.
  
- Involved; but no objections to the property change...provided as easement of the full width of the public right-of-way (street, alley or other public place) is reserved.
  
- Involved; the nature of our services and the estimated costs of removing and/or rerouting such services are:

\_\_\_\_\_  
(Utility or City Department)

\_\_\_\_\_  
By

\_\_\_\_\_  
Title

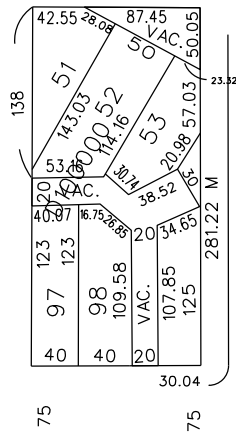
\_\_\_\_\_  
Date

\_\_\_\_\_  
Area code – Telephone number

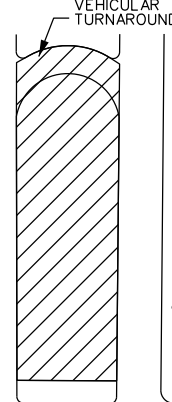
PETITION NO. 1502  
 DOWNTOWN DETROIT PARTNERSHIP  
 ONE CAMPUS MARTIUS, SUITE 380  
 DETROIT, MICHIGAN 48226  
 C/O ERIC B. LARSON  
 PHONE NO. 313 566-8250



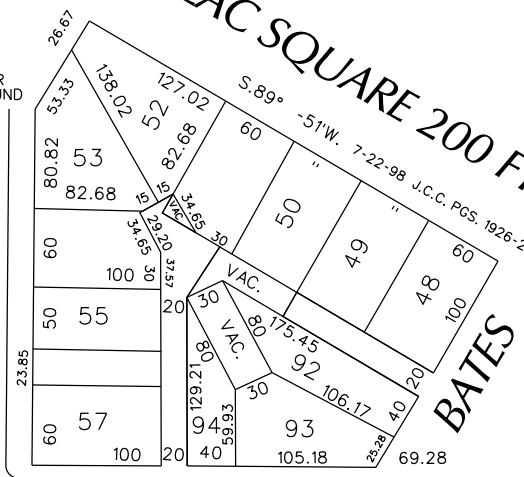
GRISWOLD ST. VARIOUS WIDTHS



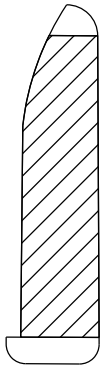
WOODWARD AVE.  
 190 FT. WD.



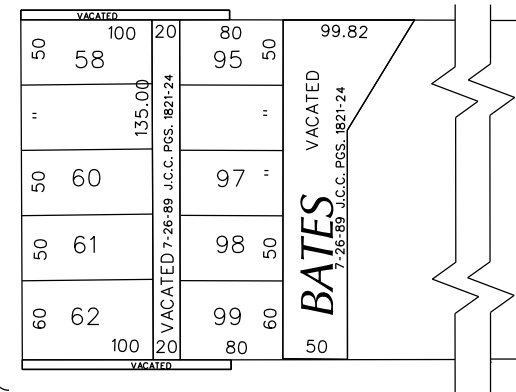
CADILLAC SQUARE 200 FT. WD.  
 BATES



50	50	70	80	20
103		99		50
80	101			70.00
EASEMENT 11-16-94 J.C.C. P.C.S. 2+28-29				
30				50
				50
				50
				50

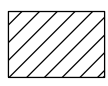


CONGRESS ST. 60 FT. WD.



LARNED ST. 60 FT. WD.

RANDOLPH ST.  
 120 FT. WD.



- REQUEST ENCROACHMENT  
 (With Streetscape Improvements)

(FOR OFFICE USE ONLY)

CARTO 28 B

B					
A					
DESCRIPTION		DRWN	CHKD	APPD	DATE
REVISIONS					
DRAWN BY	CHECKED				
DATE	APPROVED				
10-30-17					

REQUEST ENCROACHMENT  
 INTO WOODWARD  
 AT 500 - 650 WOODWARD  
 (With Streetscape Improvements)

<b>CITY OF DETROIT</b>	
CITY ENGINEERING DEPARTMENT	
SURVEY BUREAU	
JOB NO.	01-01
DRWG. NO.	X 1502



## **PROVISIONS FOR ENCROACHMENT For Petition 1502**

Detroit Water and Sewerage (DWSD) agree to the proposed encroachment subject to the fulfilling of the following provisions:

1. By approval of this petition the (DWSD) does not waive any of its rights to its facilities located in the right of way, and at all time, DWSD, its agents or employees, shall have the right to enter upon the right of way to maintain, repair, alter, service, inspect, or install its facilities. All costs incident to the damaging, dismantling, demolishing, removal and replacement of structures or other improvements herein permitted and incurred in gaining access to DWSD's facilities for maintenance, repairing, alteration, servicing or inspection caused by the encroachment shall be borne by the petitioner. All costs associated with gaining access to DWSD's facilities, which could normally be expected had the petitioner not encroached into the right of way shall be borne by DWSD.
2. All construction performed under this petition shall not be commenced until after five (5) days written notice to DWSD. Seventy-two (72) hours notice shall also be provided in accordance with P.A. 53 1974, as amended, utilizing the MISS DIG one call system.
3. Construction under this petition is subject to inspection and approval by DWSD forces. The cost of such inspection shall, at the discretion of DWSD, be borne by the petitioner.
4. If DWSD facilities located within the right of way shall break or be damaged as the result of any action on the part of the petitioner, then in such event the petitioner agrees to be liable for all costs incident to the repair, replacement or relocation of such broken or damaged DWSD facilities.
5. The petitioner shall hold DWSD harmless for any damage to the encroaching device constructed or installed under this petition, which may be caused by the failure of DWSD's facilities.



STATE  
60'

MICHIGAN  
100'

FORT  
100'

WOODWARD  
190'

20-J-1

210'

KERN - PARK  
BLOCK

CAMPUS  
MARTIUS

CADILLAC

TEE

E. CONGRESS

E. LARNED

CITY COUNTY  
BLDG

E. JEFFERSON

MONROE

RANDOLPH

LIBRARY

WAYNE  
COUNTY  
BLDG.

RANDOLPH

PLUG

PLUG

GRATIOT

BRUSH

E. FORT

BRUSH

E. FORT

BEAUBIEN

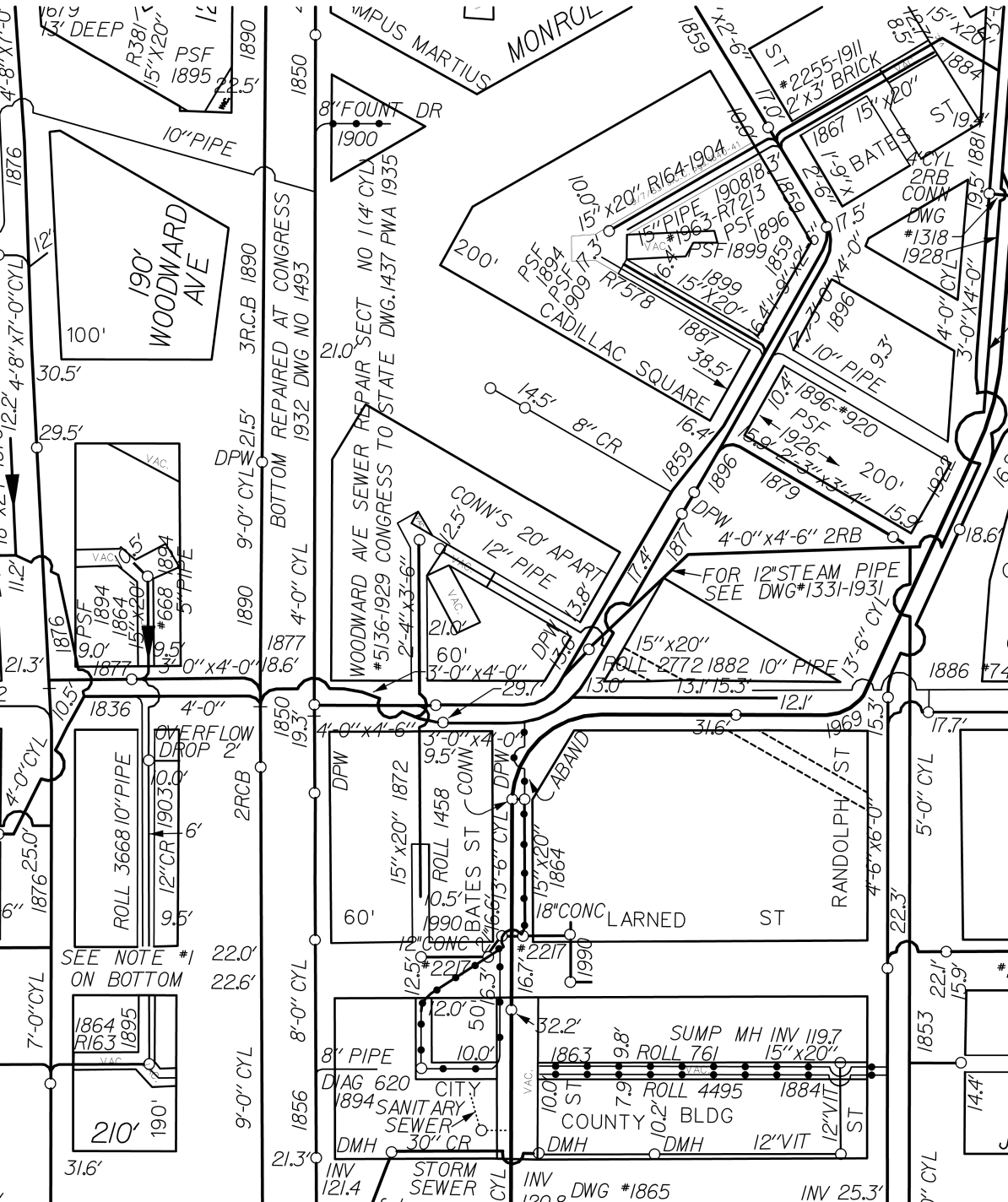
BEAUBIEN

MONROE

E. CONGR

E. LARNED

E. JEFF



190' WOODWARD AVE

WOODWARD AVE SEWER REPAIR SECT NO 114' CYL #5136-1929 CONGRESS TO STATE DWG.1437 PWA 1935

CONN'S 20' APART 12' PIPE

FOR 12" STEAM PIPE SEE DWG #1331-1931

SEE NOTE #1 ON BOTTOM

SUMP MH INV 119.7 ROLL 761 15" X 20"

ROLL 4495 1884

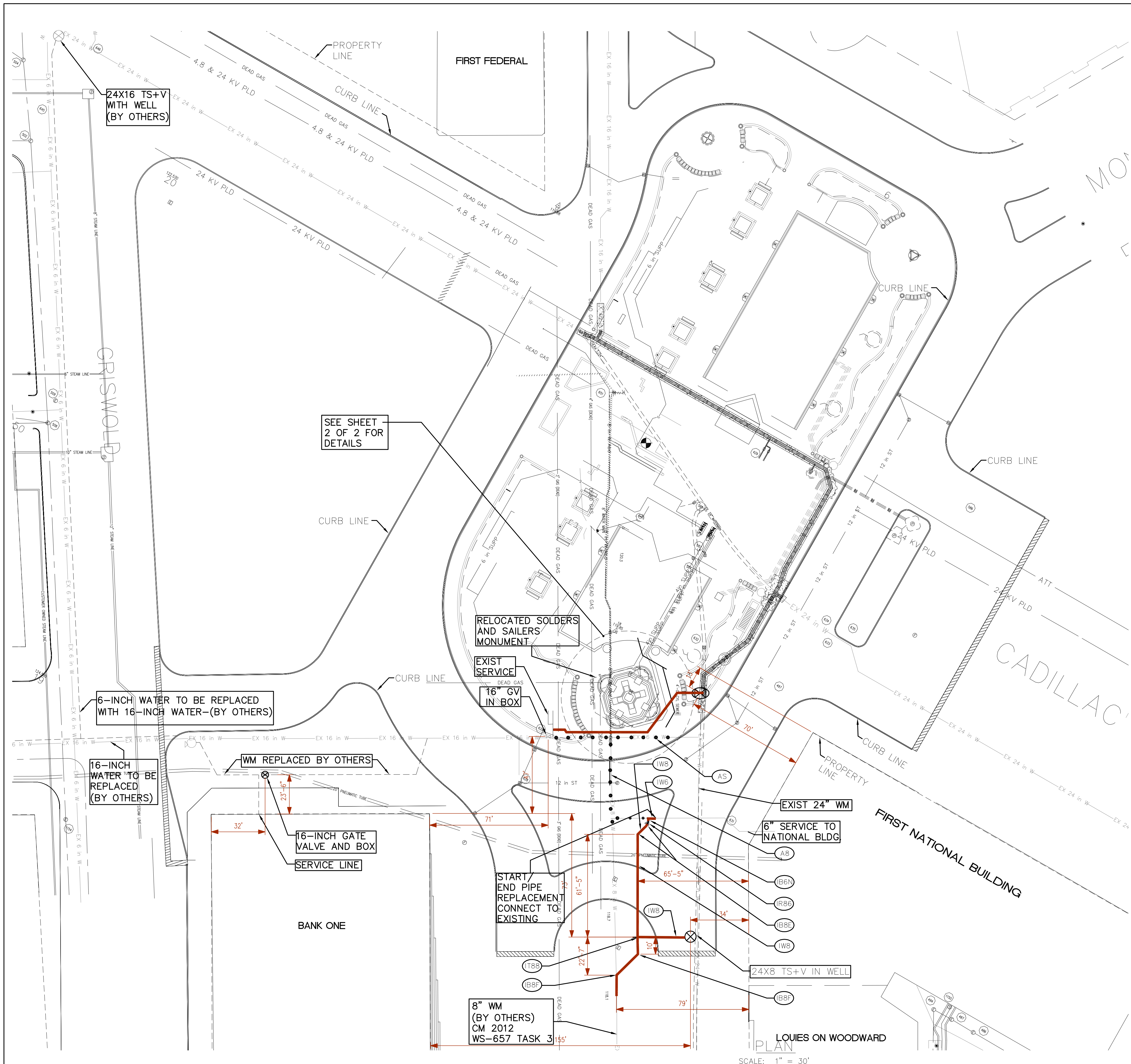
COUNTY BLDG

STORM SEWER

INV 120.8 DWG #1865

INV 25.3'





- (AB) ABANDON 8" WATERMAIN
- (AS) ABANDON 16" WATERMAIN
- (B8C) INSTALL 8" 11.25° BEND
- (B8F) INSTALL 8" 45° BEND
- (B6N) INSTALL 6" 90° BEND
- (R6R) INSTALL 8X6 REDUCER
- (T8S) INSTALL 8X8 TEE
- (W6) INSTALL 6" WATERMAIN
- (W8) INSTALL 8" WATERMAIN

**AS BUILT DWGS**  
WS-653

F					
E					
D					
C					
B					
A					
DESCRIPTION	CHECKED	APPROV	DATE		
REVISIONS					

DESIGN	MPF
DRAFTING	JFH
CHECKED	KMK
APPROVED	



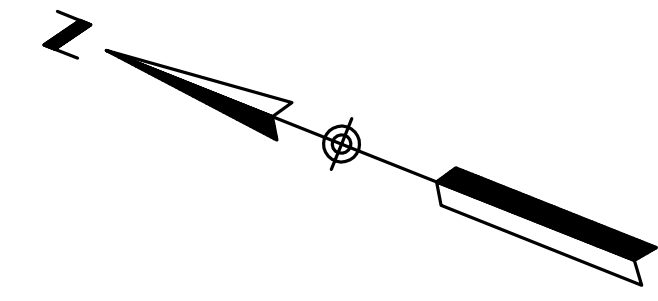
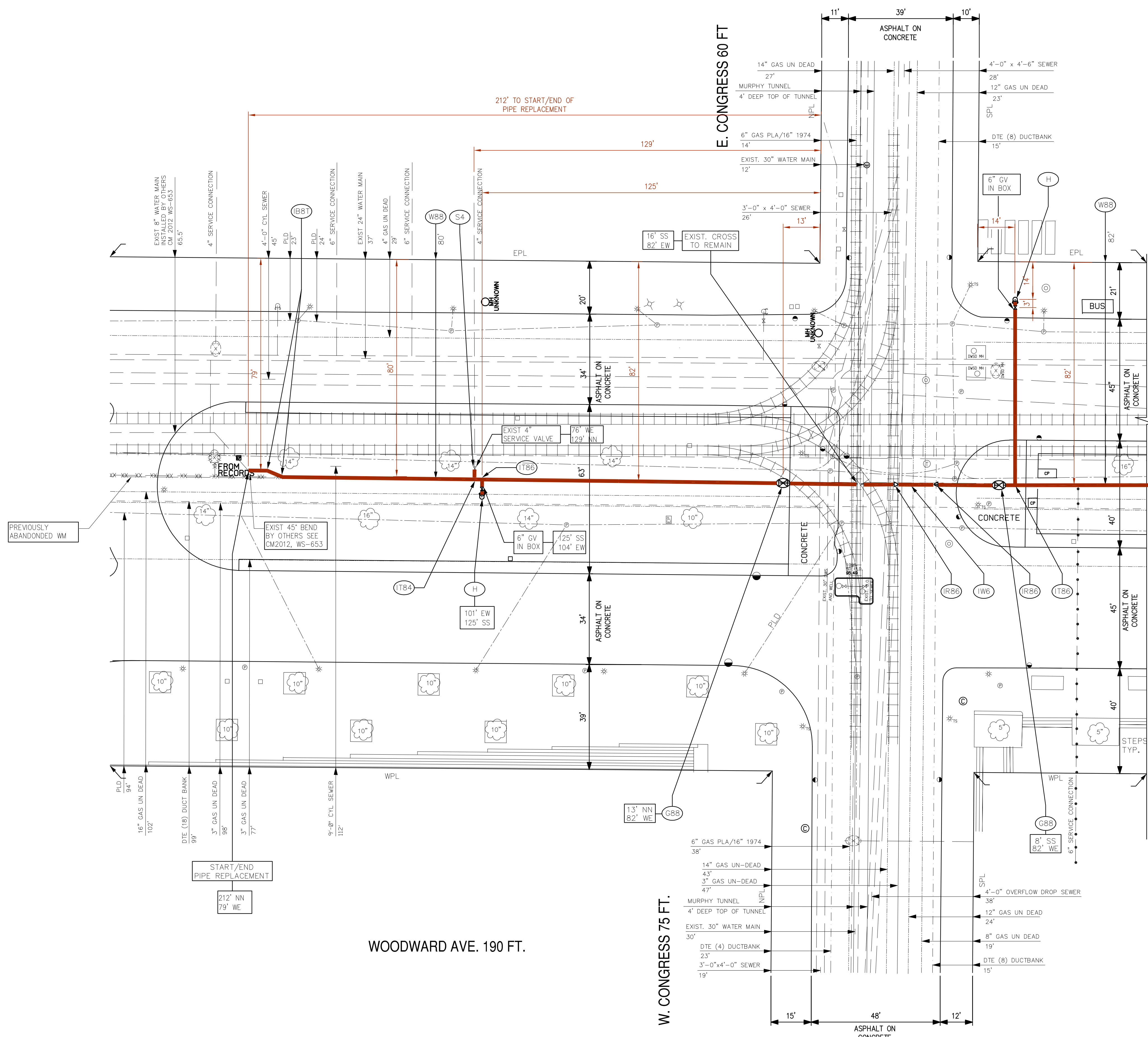
**WATERMAIN REPLACEMENT  
CAMPUS MARTIUS**

SCALE: 1" = 30'

DATE: MARCH 2004

<p><b>CITY OF DETROIT</b> <b>WATER AND SEWERAGE DEPARTMENT</b> ENGINEERING DIVISION</p>					M.D.E.Q. PERMIT NO.	
					SRF NO.	
					CONTRACT NO.	
					CM 2012	
SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE	FILE NO.	PROJECT NO.
						WS-653
					DRAWING NO.	
					1 OF 2	





- (GB8) REPLACE EXIST. 8-INCH DWSG GATE VALVE WITH 8-INCH DWSG GATE VALVE AND REPAIR WELL.
- (H) REPLACE EXIST. 6-INCH HYDRANT
- (IB81) INSTALL 8" 22.5° BEND
- (IT86) INSTALL 8" X6" TEE
- (IT84) INSTALL 8" X4" TEE
- (IR86) INSTALL 8" X6" REDUCER
- (IW6) INSTALL 6" WATERMAIN
- (S4) RECONNECT EXIST. 4-INCH SERVICE.
- (W85) REPLACE EXIST. 8-INCH WATER MAIN WITH 8-INCH DUCTILE IRON WATER MAIN.

**AS BUILT DWGS**

WS-657  
TASK 3

F									
E									
D									
C									
B									
A	AS BUILT DRAWINGS	KTG	KMK	10/05	APPROVED BY:				
	DESCRIPTION	CHK'D	APPROVED	DATE	CAD DISK	DIRECTORY	FILE NAME	DATE	
	REVISION								

DRAWN BY: D.C.K.  
 DESIGNED BY: B.M.  
 CHECKED BY: K.K.  
 APPROVED BY: \_\_\_\_\_

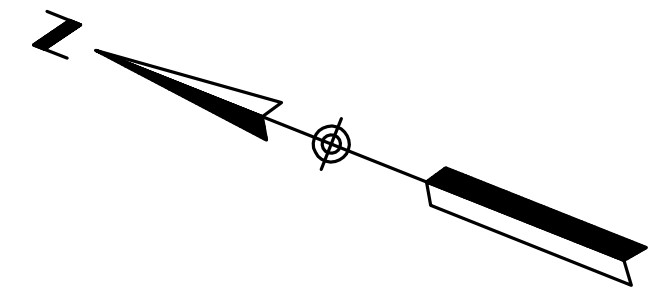
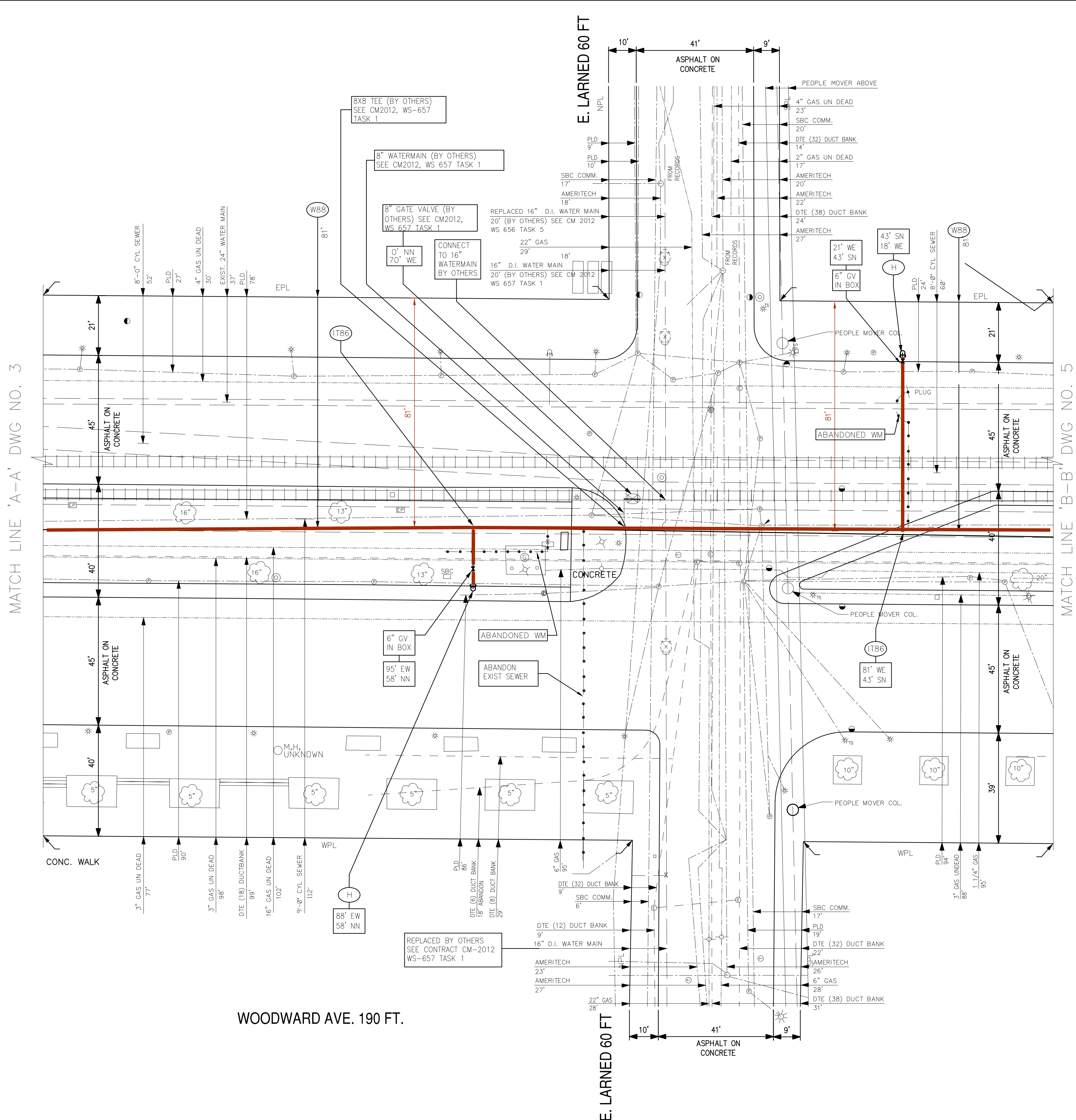
**WATER SYSTEM IMPROVEMENTS  
 VARIOUS STREETS THROUGHOUT THE CITY**

**WOODWARD AVE. - NORTH OF CONGRESS TO MATCH LINE A-A**

SCALE: 1"=20' DATE: 12/03/04

WATER AND SEWERAGE DEPARTMENT ENGINEERING DIVISION									
DESIGN PLAN PREPARED BY					AS BUILT PREPARED BY				
SUPERIOR ENGG. ASSOC. INC. 65 CADILLAC SQ., #2701, DETROIT, MI 48226 TEL: 313-964-5750, 248-353-4090					DLZ MICHIGAN, INC. 151 W. CONGRESS, STE#328, DETROIT, MI 48226 TEL: 313-961-4040				
SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE	FAMS NO.	(DESIGN)			
20	J	2				(CONSTRUCTION)			

M.D.P.H./D.N.R. PERMIT NO.  
 REF. NO. **CM-2012**  
 CONTRACT NO.  
 FILE NO.  
 DRAWING NO. **3 OF 7**



- (H) REPLACE EXIST. 6-INCH HYDRANT.
- (T86) INSTALL 8" x 6" TEE
- (W85) REPLACE EXIST. 8-INCH WATER MAIN WITH 8-INCH DUCTILE IRON WATER MAIN.

**AS BUILT DWGS**  
 WS-657  
 TASK 3

WOODWARD AVE. 190 FT.

F										
E										
D										
C										
B										
A	AS BUILT DRAWINGS	KTG	KMK	10/05	APPROVED BY:					
	DESCRIPTION	CHK'D	APPROVED	DATE	CAD DISK	DIRECTORY	FILE NAME	DATE		
	REVISION									

DRAWN BY: D.C.K.  
 DESIGNED BY: B.M.  
 CHECKED BY: K.K.  
 APPROVED BY:

**WATER SYSTEM IMPROVEMENTS**  
**VARIOUS STREETS THROUGHOUT THE CITY**  
**WOODWARD AVE. - MATCH LINE "A-A" TO MATCH LINE "B-B"**  
 SCALE: 1"=20'  
 DATE: 12/03/04

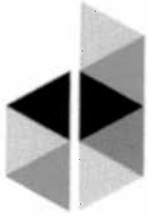
<b>WATER AND SEWERAGE DEPARTMENT</b> ENGINEERING DIVISION				M.D.P.H./D.N.R. PERMIT NO.			
DESIGN PLAN PREPARED BY				AS BUILT PREPARED BY			
SUPERIOR ENGG. ASSOC. INC. 65 CADILLAC SQ., #2701, DETROIT, MI 48226 TEL: 313-964-5750, 248-353-4090				DLZ MICHIGAN, INC. 151 W. CONGRESS, STE#328, DETROIT, MI 48226 TEL: 313-961-4040			
SECTION MAP	TOWN	RANGE	SECTION	PORTION CODE	FAMS NO.	(DESIGN)	DRAWING NO.
20	J	2				(CONSTRUCTION)	<b>4 OF 7</b>

REF. NO. CM-2012

CONTRACT NO.

FILE NO.





**DOWNTOWN  
DETROIT  
PARTNERSHIP**

March 10, 2017

SENT VIA HAND DELIVERY

Detroit City Council  
Coleman A. Young Municipal Center  
2 Woodward Avenue  
Detroit, Michigan, 48226

**RE: Woodward Avenue Median Enhancements - Petition for Right of Way Encroachment Approval**

Dear Honorable Council:

The Downtown Detroit Partnership (DDP), in partnership with the City of Detroit, private sector partners and funders, would like to conduct a streetscape improvement project in Downtown Detroit, with the goal of enhancing and beautifying the two traffic medians within the Woodward Avenue right of way, from the Fort Street right of way to the Larned Street right of way. The proposed streetscape improvements would be undertaken immediately, in concert with the opening of the QLINE, which is scheduled to open May 12<sup>th</sup> of this year.

The proposed streetscape improvements include the installation of ornamental trees and flowers, lawn areas, pedestrian pathways using non-standard and standard paving materials, furnishings such as benches, swings, moveable chairs and tables, and public art such as archways and artistic seating objects.

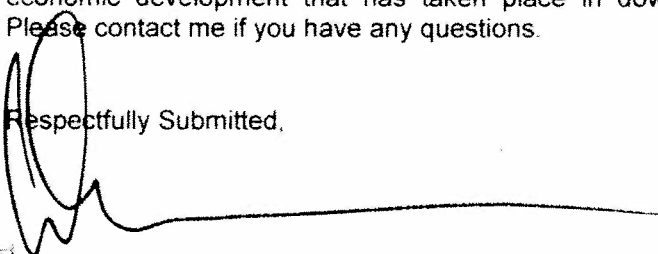
The proposed improvements also include an updated irrigation system and the installation of underground electrical system to power various outlets and the archways within both medians.

Also proposed, subject to approval from the Traffic Engineering Division of the Department of Public Works, are new traffic controls/equipment, signal timing, and striping to safely warrant vehicular movements and pedestrian traffic coming to and from the median areas from both sides of the street and from median to median.

As part of this proposal, the DDP would like to have the vehicular turnaround lane located north of the northernmost median closed to allow safe pedestrian movement between medians.

DDP respectfully requests that the Honorable Council adopt a resolution authorizing the proposed encroachments in order to situate the various elements within the Woodward Avenue medians as described above and as described in Attachment A to this petition letter. DDP believes that this project adds to the tremendous work and economic development that has taken place in downtown through public-private partnership arrangements. Please contact me if you have any questions.

Respectfully Submitted,

  
Eric B. Larson  
CEO

Attachments: A- Woodward Avenue Median Enhancement Conceptual Plans & Details

One Campus Martius  
Suite 380  
Detroit, MI 48236

Tel: 313.566.8250  
Fax: 313.567.3474  
[downtowndetroit.org](http://downtowndetroit.org)

CITY OF DETROIT - MAR 20 2017

### **Woodward Avenue Median Enhancements- Scope of Work**

The Downtown Detroit Partnership (DDP), in partnership with the City of Detroit, private sector partners and funders, would like to conduct a streetscape improvement project in downtown Detroit, with the goal of enhancing and beautifying the two traffic medians within the Woodward Avenue right of way, from the Fort Street right of way to the Larned Street right of way. The proposed streetscape improvements would be undertaken immediately, in concert with the opening of the QLINE, which is scheduled to open in May of this year.

The proposed streetscape improvements include the installation of ornamental trees and flowers, lawn areas, pedestrian pathways using non-standard and standard paving materials, furnishings such as benches, swings, moveable chairs and tables, and public art such as archways and artistic seating objects.

The proposed improvements also include the installation of a new underground irrigation system and, installation of an underground electrical distribution system to power various light fixtures, outlets and the archways within both medians.

Also proposed are two new ADA crosswalk aprons, traffic controls/ equipment, signal timing, and striping to safely warrant vehicular movements and pedestrian traffic coming to and from the median areas from both sides of the street and from median to median.

As part of this proposal, the DDP has proposed to the City of Detroit to have the vehicular "turn around" lanes located north of the northernmost median closed by the City to allow for additional pedestrian plaza space to be made available for seating, accommodating a food truck, and other vending opportunities.

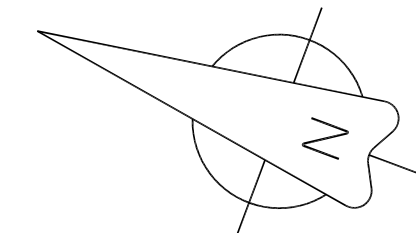
DDP has petitioned the Detroit City Council to adopt a resolution authorizing the proposed encroachments to situate the various elements within the Woodward Avenue medians as described above.



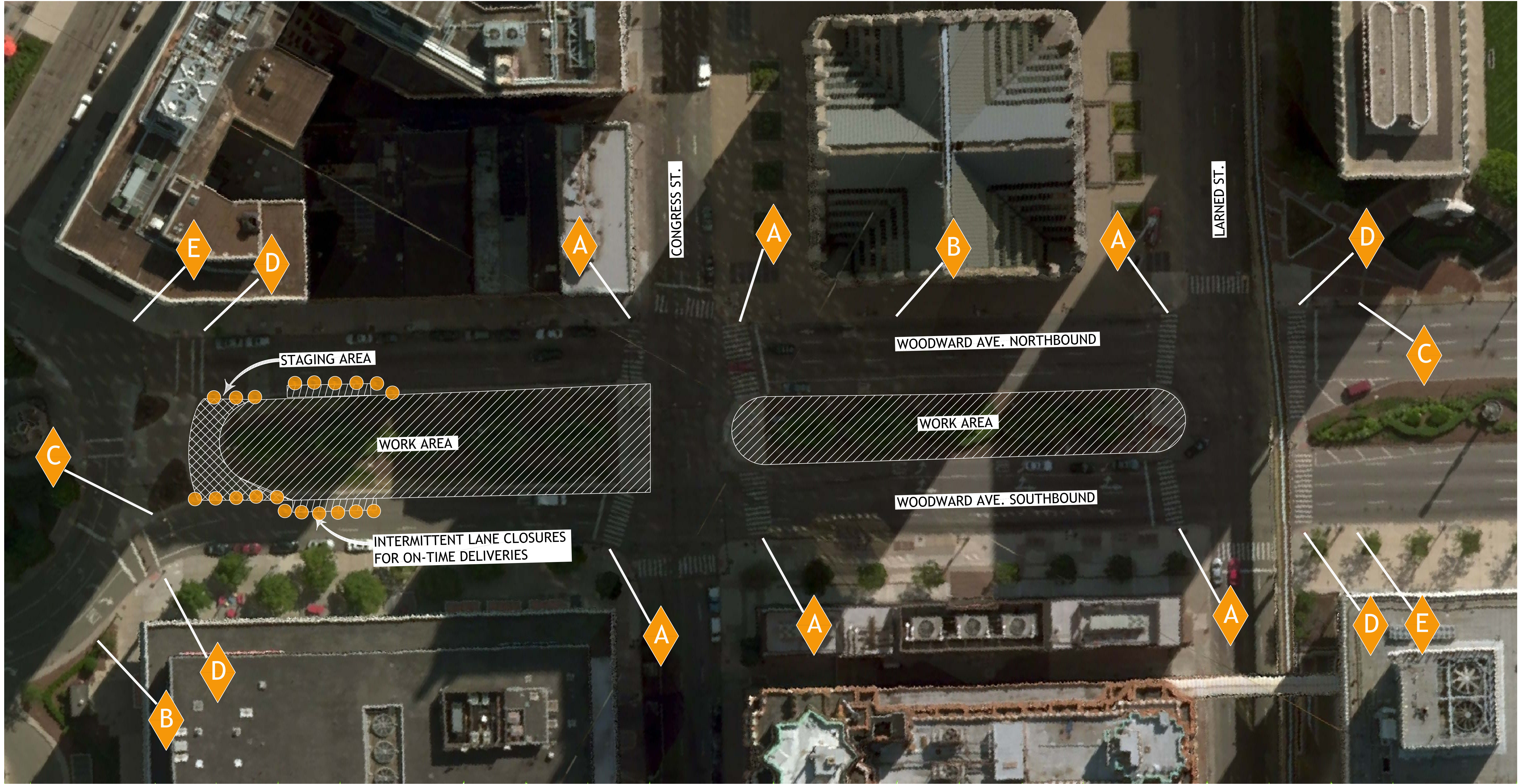




PROJECT NUMBER:  
 DATE: 3-27-17  
 SCALE: 1" = 30'  
 DESIGNED BY: M. BROCK  
 DRAWN BY: M. BROCK  
 CHECKED BY:



APPROVED BY:  
 REVISIONS



- A** SIDEWALK CLOSED  
R9-9
- D** SIDEWALK CLOSED AHEAD  
R9-11
- B** LEFT LANE CLOSED AHEAD  
W20-5
- E** END ROAD WORK  
G20-2
- C** WORK ZONE BEGINS  
R5-18C
- CHANNELIZATION DEVICE

**SITE DATA**

WORK HOURS: 7:30 AM TO 3:30 PM  
 START DATE: 4-7-17  
 END DATE: 5-8-17  
 MONDAYS THROUGH SATURDAYS ONLY

UTILITY INFORMATION, AS SHOWN, INDICATES APPROXIMATE LOCATIONS AND TYPES OF FACILITIES ONLY, AS DISCLOSED TO THIS FIRM BY THE VARIOUS UTILITY COMPANY'S RECORDS. NO GUARANTEE IS GIVEN OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF.

PRIOR TO CONSTRUCTION, ALL LOCATIONS AND DEPTHS OF EXISTING OVERHEAD AND UNDERGROUND UTILITIES (IN CONFLICT WITH THE CONSTRUCTION OF PROPOSED IMPROVEMENTS) SHALL BE VERIFIED IN THE FIELD.

DURING CONSTRUCTION, CONTRACTOR SHALL USE EXTREME CAUTION WHEN OPERATING NEAR OVERHEAD AND/OR BURIED UTILITIES. CALL MISS DIG.

72 HOURS  
 3 WORKING DAYS  
**811** BEFORE YOU DIG  
 CALL MISS DIG  
 1-800-482-7171  
 OR  
 811  
 (TOLL FREE) FOR THE LOCATION OF UNDERGROUND FACILITIES.  
 KNOW WHAT'S BELOW

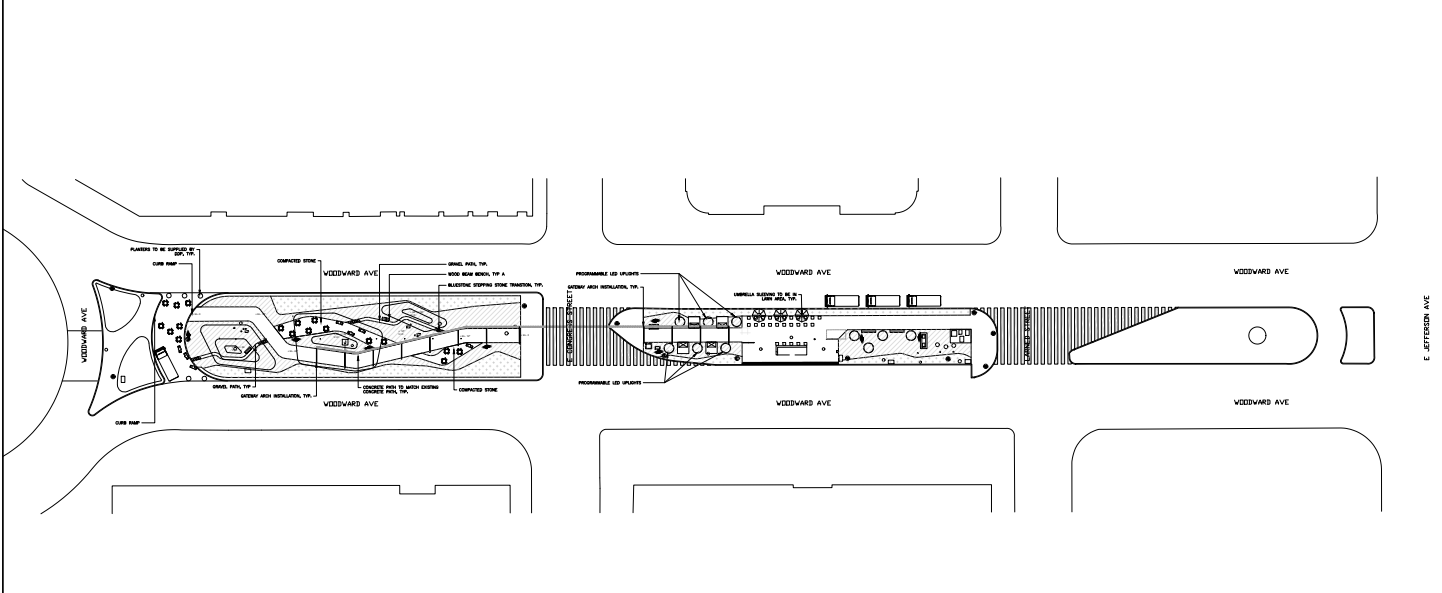
ENGINEERING FOR RESULTS  
 13500 REECK ROAD  
 SOUTHGATE, MI 48195  
 (734) 759-1600  
 FAX (734) 282-6566  
 WWW.HENNESSEY-ENGINEERS.COM



TITLE: SIGN AND STAGING PLAN  
 CONGRESS STREET STATION  
 CITY OF DETROIT  
 WAYNE COUNTY, MICHIGAN

SHEET  
**CE1**





**CONGRESS ST. STATION**  
 WOODWARD AVENUE & CONGRESS ST.  
 DETROIT, MI 48226

E. JEFFERSON AVE

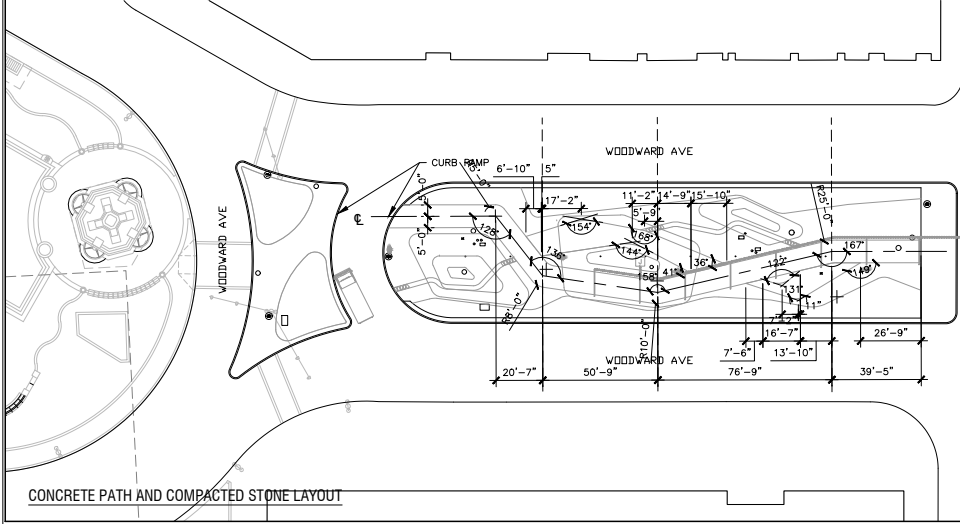
These drawings are instruments of service and as such may not be used for other projects, for additions to this project or completion of this project, by others. This is a trademark design.

REVISION #1	03/13/2017
DATE:	03/07/17
DRAWN BY:	MJ
SCALE:	1" = 30'-0"
DESCRIPTION:	100% CONCEPT DESIGN PACKAGE
APPROVED BY:	MDC

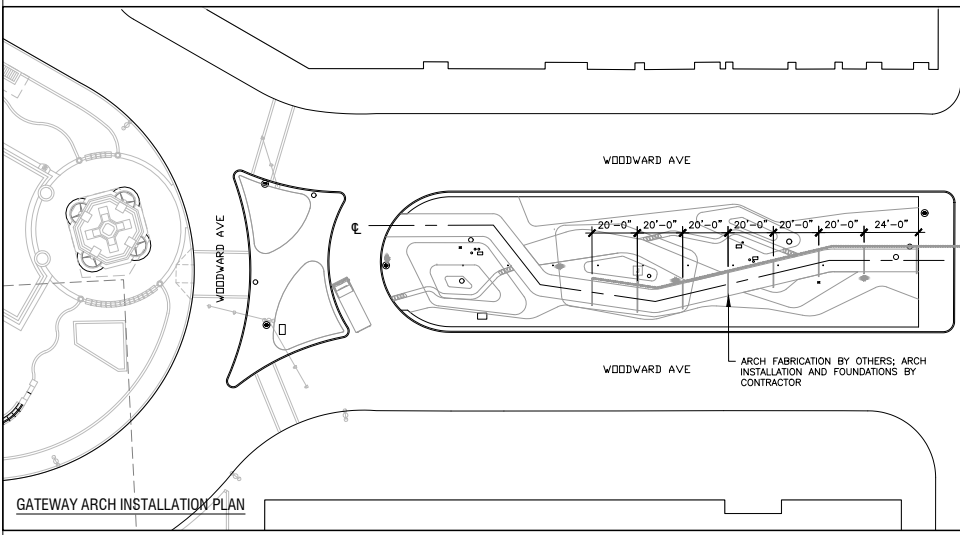


LEGEND	
	PERENNIAL PLANTING BEDS
	LAWN PLANTING
	MOVABLE SITE FURNISHINGS
	SITE BENCHES
	SITE SWINGS
	ARTISTIC CUBE INSTALLATION / SEATING ELEMENTS
	ARCH LIGHTING CONTROL BOX
	GFCI OUTLETS
	ELECTRIC & CMX FOR ARCH LIGHTING, TYP.
	MEDIAN CROSSWALKS

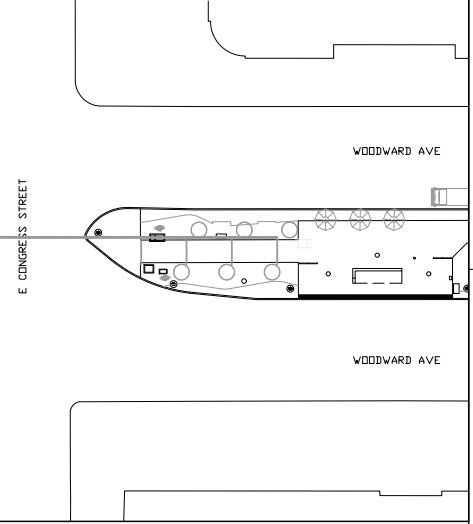
**ANNOTATED SITE PLAN**  
 DRAWING FOR COORDINATION ONLY



CONCRETE PATH AND COMPACTED STONE LAYOUT



GATEWAY ARCH INSTALLATION PLAN



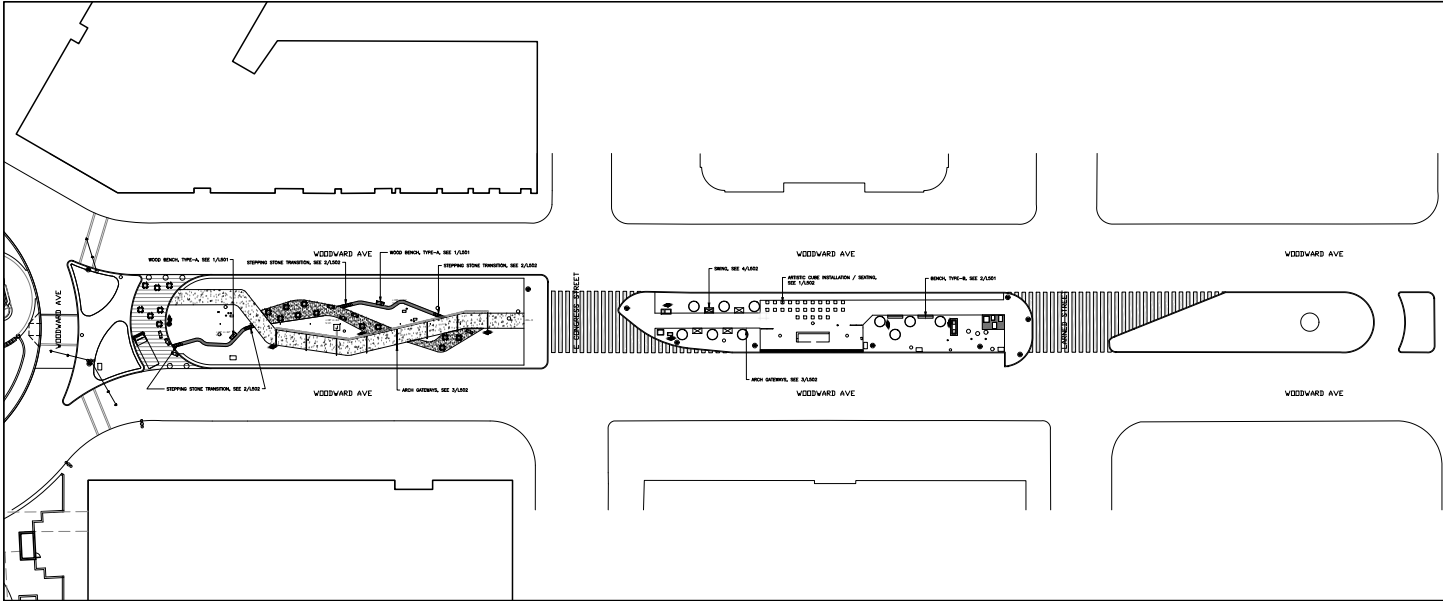
NOTE: ALL DIMENSION TO BE V.I.F.

These drawings are instruments of service and as such may not be used for other projects, for additions to this project or completion of this project by others. This is a trademark design.

REVISION #1 03/13/2017  
 DATE: 03/07/17  
 DRAWN BY: MJ  
 SCALE: 1" = 20'-0"  
 DESCRIPTION:  
 100% CONCEPT DESIGN PACKAGE  
 APPROVED BY: MDC



CONCEPTUAL  
 LAYOUT PLAN  
 DRAWING FOR COORDINATION ONLY



**CONGRESS ST. STATION**  
 WOODWARD AVENUE & CONGRESS ST.  
 DETROIT, MI 48226





These drawings are instruments of service and as such may not be used for other projects, for additions to this project or completion of this project by others. This is a trademark design.

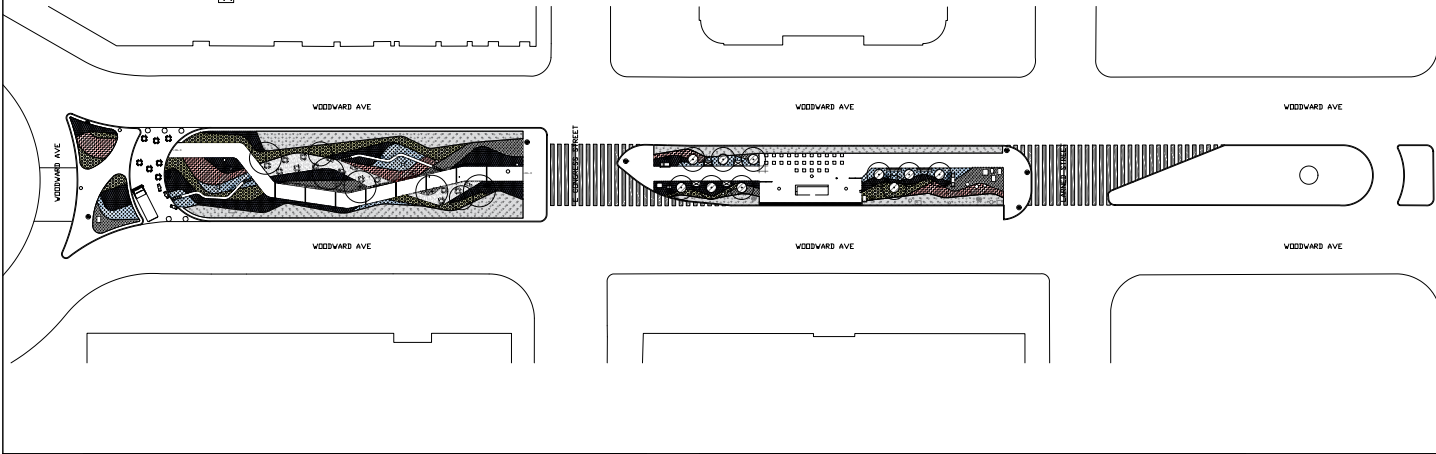
REVISION #1	03/13/2017
DATE:	03/07/17
DRAWN BY:	MJ
SCALE:	1" = 30'-0"
DESCRIPTION:	100% CONCEPT DESIGN PACKAGE
APPROVED BY:	MEC



**CONCEPTUAL MATERIALS PLAN**  
 DRAWING FOR COORDINATION ONLY

**LEGEND**

-  C.I.P. CONCRETE PATH TO MATCH EXISTING CONCRETE PATH. SEE ENGINEER'S DWGS FOR DETAILS
-  STONE FINES PAVING. SEE ENGINEER'S DWGS FOR DETAILS. MATERIAL COLOR TO BE APPROVED BY GROUNDSWELL
-  1/2" GRAVEL GARDEN PATH
-  EXISTING ASPHALT PAVING TO BE PAINTED. OPEN CALL TO ARTISTS OPPORTUNITY



WOODWARD V. PLANTING PLAN KEY						2/28/2017	
Group	Symbol	Scientific Name	Common Name	Site upon purchase	Form	Quantity	Additional Notes
A // White	ALL	Allium Mount Everest	Ornamental onion	bulb	Not available	182	Spacing is 4 - 8" on center.
A // White	ANE	Alexandria grasscloth	Windowpane	1 gallon	Upright, dense growth	54	Spacing is 18" on center.
A // White	ASIT	Aspidistra 'Duchowland'	Aspidistra	1 gallon	Upright, dense growth	54	Spacing is 18" on center.
A // White	ATH	Athyrium japonicum var. japonicum	Japanese painted fern	1 gallon	Upright, dense growth	54	Spacing is 18" on center.
A // White	BAP	Baginella alba	Fairbridge	1 gallon	Upright, dense growth	54	Spacing is 18" on center.
A // White	DES	Deschampsia flexuosa	Cricklebar grass	1 gallon	Upright, dense growth	105	Spacing is 24" on center.
A // White	EGH	Eragrostis	Purple Caneflower	1 gallon	Upright, dense growth	54	Spacing is 18" on center.
A // White	ONO	Oenothera serrulata	Smallish fern	1 gallon	Upright, dense growth	54	Spacing is 18" on center.
A // White	PVC	Pycnanthemum medium	Mountain Mint	1 gallon	Upright, dense growth	54	Spacing is 18" on center.
B // Blue	ALA	Allium azarum	Blue pearl	bulb	Not available	210	Spacing is 4 - 8" on center.
B // Blue	AMS	Armonia rubicincta	Blue star	1 gallon	Upright, dense growth	70	Spacing is 18" on center.
B // Blue	ATY	Athyrium filix-femina	Lady fern	1 gallon	Upright, dense growth	70	Spacing is 18" on center.
B // Blue	DEL	Delphinium exaltatum	Tall larkspur	1 gallon	Upright, dense growth	70	Spacing is 18" on center.
B // Blue	NEP	Nepeta x 'Raspouze' Select	Catnip	1 gallon	Upright, dense growth	70	Spacing is 18" on center.
B // Blue	PHL	Phlox paniculata 'Blue Paradise'	Garden Phlox	1 gallon	Upright, dense growth	70	Spacing is 18" on center.
B // Blue	SOH	Schizanthus litoralis 'The Blue'	Little Blue Stem	1 gallon	Upright, dense growth	118	Spacing is 24" on center.
B // Blue	SYM	Symplocarpos caroliniana	Wood aster	1 gallon	Upright, dense growth	70	Spacing is 18" on center.
C // Purple	ALH	Allium hollandicum 'Purple Sensation'	Ornamental onion	bulb	Not available	878	Spacing is 4 - 8" on center.
C // Purple	ATY	Athyrium filix-femina	Lady fern	1 gallon	Upright, dense growth	263	Spacing is 18" on center.
C // Purple	ATH	Athyrium japonicum var. japonicum	Japanese painted fern	1 gallon	Upright, dense growth	263	Spacing is 18" on center.
C // Purple	BAU	Baginella Purple Smokey	Fairbridge	1 gallon	Upright, dense growth	263	Spacing is 18" on center.
C // Purple	DES	Deschampsia flexuosa	Cricklebar grass	1 gallon	Upright, dense growth	255	Spacing is 24" on center.
C // Purple	EGM	Echinacea purpurea 'Magnum'	Purple Caneflower	1 gallon	Upright, dense growth	263	Spacing is 18" on center.
C // Purple	MEV	Monarda mollis	Pink Bergamot	1 gallon	Upright, dense growth	263	Spacing is 18" on center.
C // Purple	NEW	Nepeta racemosa 'Walker's Low'	Catnip	1 gallon	Upright, dense growth	263	Spacing is 18" on center.
D // Red	AGU	Agrostis canadensis	Columbine	1 gallon	Upright, dense growth	71	Spacing is 18" on center.
D // Red	ASS	Aspidistra 'Soft'	Aspidistra	1 gallon	Upright, dense growth	71	Spacing is 18" on center.
D // Red	ECP	Echinacea purpurea 'Pink Double Delight'	Purple caneflower	1 gallon	Upright, dense growth	71	Spacing is 18" on center.

WOODWARD V. PLANTING PLAN KEY						2/28/2017	
Group	Symbol	Scientific Name	Common Name	Site upon purchase	Form	Quantity	Additional Notes
D // Red	EGA	Echinacea purpurea 'All Star Jewel'	Purple caneflower	1 gallon	Upright, dense growth	71	Spacing is 18" on center.
D // Red	MOD	Monarda didyma	Beebalm	1 gallon	Upright, dense growth	71	Spacing is 18" on center.
D // Red	MLH	Monarda mollis	Pink bergamot	1 gallon	Upright, dense growth	52	Spacing is 24" on center.
D // Red	ONO	Oenothera serrulata	Sensitive fern	1 gallon	Upright, dense growth	71	Spacing is 18" on center.
D // Red	PAN	Panicum virgatum 'Chelyenne Sky'	Switchgrass	1 gallon	Upright, dense growth	52	Spacing is 24" on center.
E // Yellow	AGU	Agrostis chrysantha	Yellow Columbine	1 gallon	Upright, dense growth	191	Spacing is 18" on center.
E // Yellow	ATY	Athyrium filix-femina	Lady fern	1 gallon	Upright, dense growth	191	Spacing is 18" on center.
E // Yellow	BAC	Baginella Carolina Moonlight	False Indigo	1 gallon	Upright, dense growth	191	Spacing is 18" on center.
E // Yellow	CAL	Calamagrostis canadensis 'Star Fasciner'	Feather reed grass	1 gallon	Upright, dense growth	95	Spacing is 24" on center.
E // Yellow	COR	Coreopsis lanceolata	Lanceleaf coreopsis	1 gallon	Upright, dense growth	191	Spacing is 18" on center.
E // Yellow	DEC	Deschampsia cespitosa	'Softstar'	1 gallon	Upright, dense growth	95	Spacing is 24" on center.
E // Yellow	ONO	Oenothera serrulata	Sensitive fern	1 gallon	Upright, dense growth	191	Spacing is 18" on center.
E // Yellow	RLD	Rudbeckia triloba	Brown-eyed susan	1 gallon	Upright, dense growth	191	Spacing is 18" on center.
E // Yellow	SOL	Solidago 'Staby Gold'	Deer goldenrod	1 gallon	Upright, dense growth	191	Spacing is 18" on center.
E // Yellow	SOF	Solidago flexilis	Broad leaf goldenrod	1 gallon	Upright, dense growth	191	Spacing is 18" on center.
Trees	NYS	Nyssa sylvatica*	Black gum	6-8" caliper	Straight single stem, good horizontal branching on all sides.	5	OPTION ONE for canopy tree, pending availability.
Trees	LR	Liriodendron tulipifera*	Tulip tree	6-8" caliper	Straight single stem, good horizontal branching on all sides.	5	OPTION TWO for canopy tree, pending availability.
Trees	CON	Cornus kousa	Kousa dogwood	10-12"	Upright multistem, good horizontal branching on all sides.	6	
Trees	ACE	Acer griseum	Paperbark maple	10-12"	Upright multistem, good horizontal branching on all sides.	6	

\* The canopy trees include either Nyssa or Liriodendron, not both.

These drawings are instruments of service and as such may not be used for other projects, nor additions to this project or completion of this project, by others. This is a trademark design.

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DRAWN BY: M  
SCALE: 1" = 30'-0"  
DESCRIPTION: 100% CONCEPT DESIGN PACKAGE  
APPROVED BY: MDC



CONCEPTUAL PLANTING PLAN  
DRAWING FOR COORDINATION ONLY

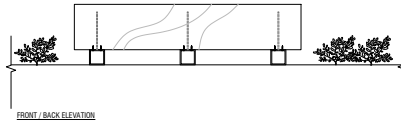
**CONGRESS ST. STATION**  
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 DETROIT, MI 48226

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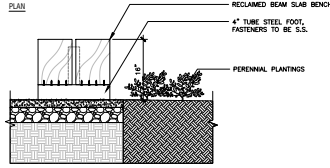
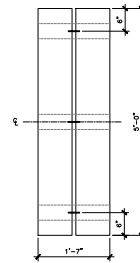
**CONCEPTUAL SHOP DRAWINGS**  
 DRAWING FOR COORDINATION ONLY



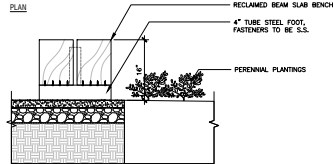
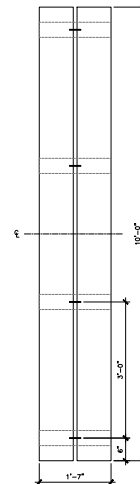
FRONT / BACK ELEVATION

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 1" = 1'-0"

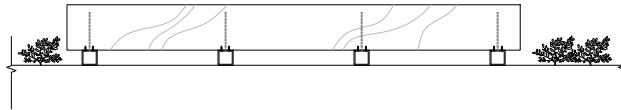
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SECTION



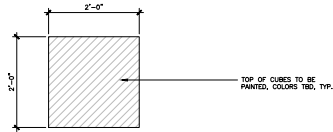
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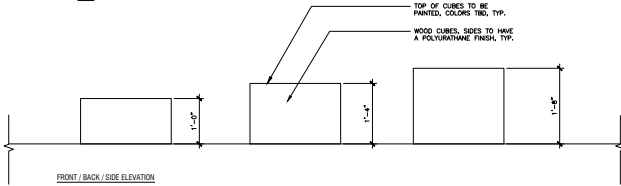
FRONT / BACK ELEVATION

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 1" = 1'-0"

NOTE: BENCH FABRICATION BY OTHERS, INSTALLATION BY CONTRACTOR

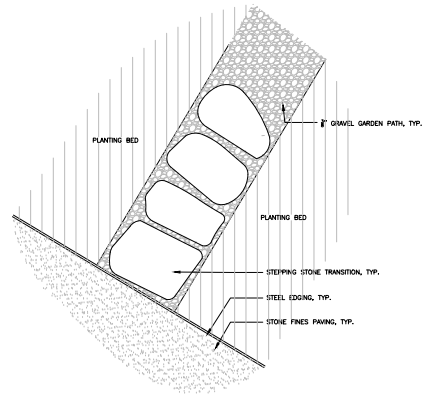


PLAN

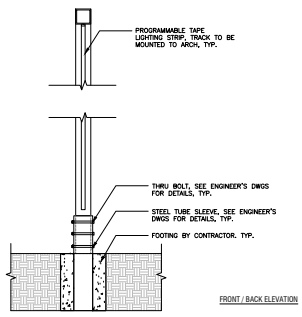


FRONT / BACK / SIDE ELEVATION

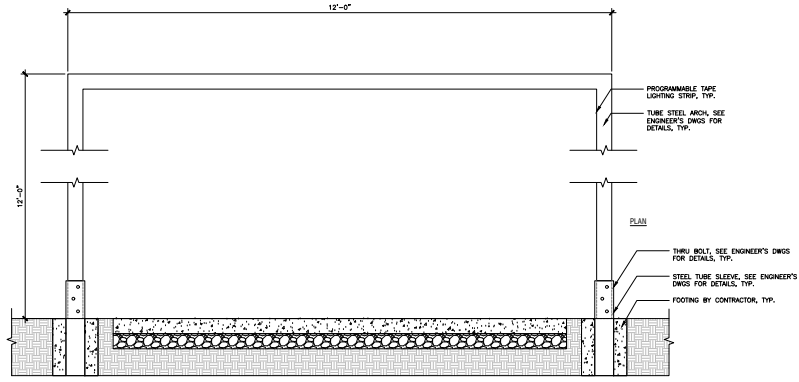
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 NTS NOTE: CUBE FABRICATION BY OTHERS, INSTALLATION BY CONTRACTOR



02 STEPPING STONE TRANSITION  
 NTS



FRONT / BACK ELEVATION



PLAN

SECTION

03 GATEWAY ARCHES  
 NTS NOTE: GATEWAY ARCH FABRICATION BY OTHERS, INSTALLATION BY CONTRACTOR

04 SHINGS  
 NTS

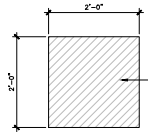
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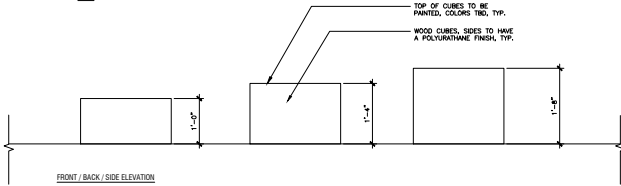


CONCEPTUAL SHOP DRAWINGS  
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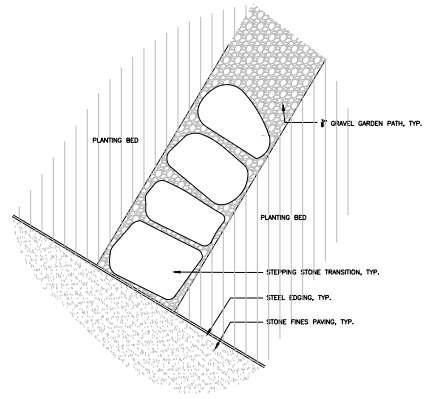


PLAN

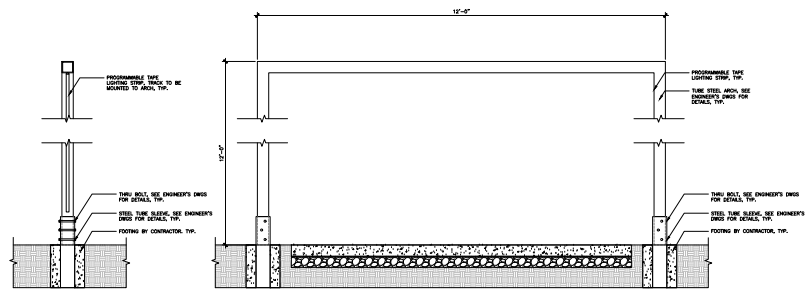


FRONT / BACK / SIDE ELEVATION

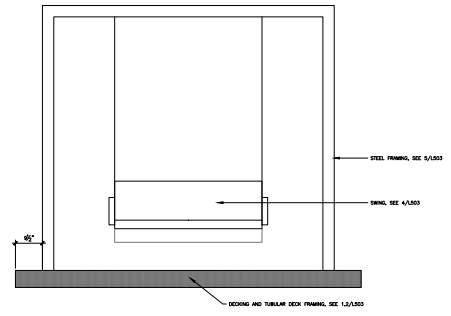
01 ARTISTIC CUBE INSTALLATIONS  
 NTS NOTE: CUBE FABRICATION BY OTHERS, INSTALLATION BY CONTRACTOR



02 STEPPING STONE TRANSITION  
 NTS



03 GATEWAY ARCHES  
 NTS NOTE: GATEWAY ARCH FABRICATION BY OTHERS, INSTALLATION BY CONTRACTOR



04 SWINGS  
 NTS NOTE: SWING STRUCTURE FABRICATION BY OTHERS, INSTALLATION BY CONTRACTOR

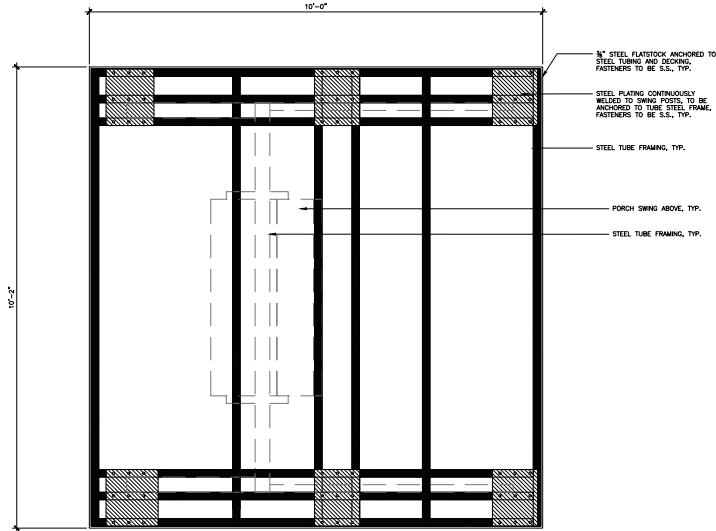
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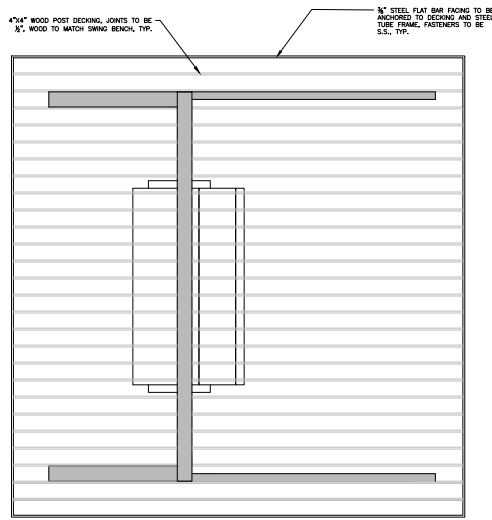
CONCEPTUAL SHOP DRAWINGS  
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01 STEEL TUBE DECK FRAMING

NOTE: SWING STRUCTURE FABRICATION BY OTHERS, INSTALLATION BY CONTRACTOR

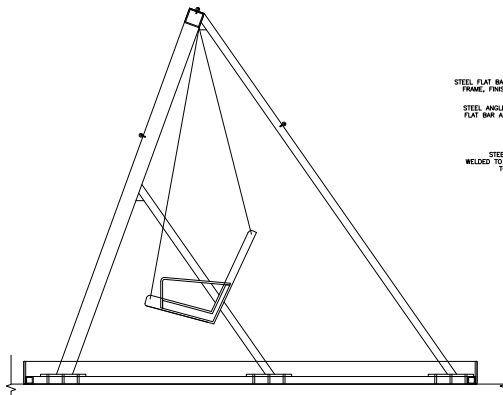
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02 SWING DECKING

NOTE: SWING STRUCTURE FABRICATION BY OTHERS, INSTALLATION BY CONTRACTOR

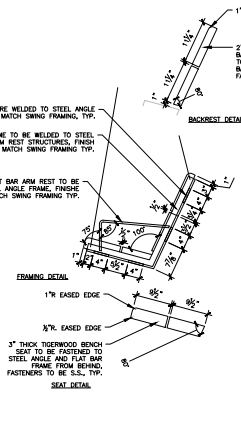
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03 SWING FRAME ANCHOR PLATES

NOTE: SWING STRUCTURE FABRICATION BY OTHERS, INSTALLATION BY CONTRACTOR

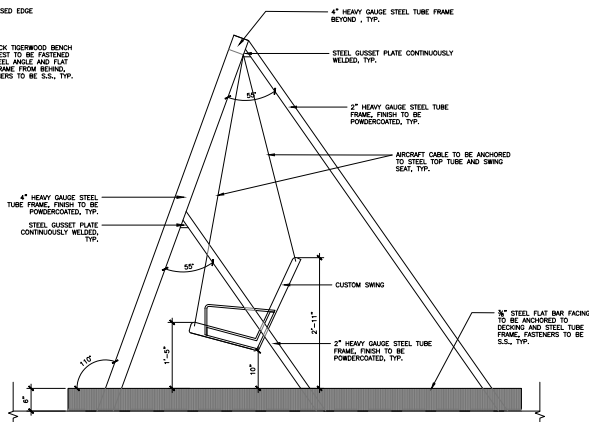
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04 SWING

NOTE: SWING STRUCTURE FABRICATION BY OTHERS, INSTALLATION BY CONTRACTOR

N15



05 SWING FRAMING

NOTE: SWING STRUCTURE FABRICATION BY OTHERS, INSTALLATION BY CONTRACTOR

N15

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L-503



# SORELLA

## Product Data Sheet



Classic in form. Sleek in steel. Sorella is the lovely Italian word for "sister" and an apt name for this attractive family group. Sorella planters are related in their construction and softly curved rectilinear profile, complementary in their individual shapes and sizes.

### Sorella

- Sorella planters may be specified in powdercoated metal.
- Planters available in rectangle or square shapes, in 18" and 30" heights.
- Fabricated, welded and ground steel panels attach to a recycled plastic base, with glides and optional drain holes.
- Planter bases and glides are compression-molded recycled plastic resulting from an innovative, patented melting process that utilizes 100% post-consumer and post-industrial waste.
- This unique process blends several material types, channeling more discarded plastics away from the landfill and into new life.
- Bases are 100% recyclable.

### Finishes

- All metal is finished with Landscape Forms' proprietary Pangard II® polyester powdercoat, a hard yet flexible finish that resists rusting, chipping, peeling and fading.
- A wide range of standard, optional and custom colors are available.

### To Specify

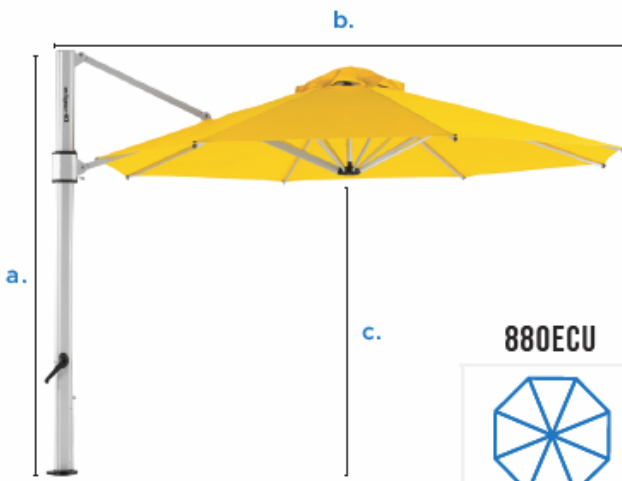
- Select Sorella planter, product description and size.
- Select powdercoat metal color.
- Specify with or without drain holes.

Designed by Robert Chipman, ASLA

	STYLE	DEPTH	WIDTH	HEIGHT	PRODUCT WEIGHT
	freestanding	15"	15"	18"	29 lb
	freestanding	30"	30"	18"	74 lb
	freestanding	45"	45"	18"	129 lb
	freestanding	30"	15"	18"	48 lb
	freestanding	45"	15"	18"	67 lb
	freestanding	45"	30"	18"	96 lb
	surface mounted	15"	15"	30"	39 lb
	freestanding	30"	30"	30"	96 lb
	freestanding	45"	45"	30"	165 lb
	surface mounted	30"	15"	30"	65 lb
	surface mounted	45"	15"	30"	90 lb
	freestanding	45"	30"	30"	125 lb

# ECLIPSE SERIES

COMMERCIAL CANTILEVER



## ITEM NUMBERS:

**880ECU**

**883ECU-SQ**



Octagon



Square

### DIMENSIONS OF OPEN UMBRELLA:

Width Of Canopy	13'	10'X10'
<b>a:</b> Overall Height	105'	105'
<b>b:</b> Distnace From Rear Mast To Edge	159'	135'
<b>c:</b> Canopy To Ground Clearece (90° Angle)	80"	82"
Mast Diameter	3.25" X 5"	3.25" X 5"
Weight	140LBS.	120LBS.
		13.5' DIAGONAL

### DIMENSIONS OF CLOSED UMBRELLA:

<b>d:</b> Canopy To Ground Clearance	25'	31'
<b>e:</b> Distnace From Rear Mast To Edge	13'	11'

### PACKING DIMENSIONS:

Dimensions of Cardboard Package	115"X 20"X11"	115"X 20"X11"
Individual Umbrella Packaged Weight	165LBS.	145LBS.
Maximum Umbrella Per Package	1	1

Maximum Umbrella Pacakged Weight	165LBS.	145LBS.
----------------------------------	---------	---------



FRAME FINISH:



SILVER MATTE

## KEY FEATURES:

- 9oz. Marine Grade Acrylic Fabric
- Marine Grade Corrosion Resistant Aluminum Frame
- Full 360° Rotation
- Multiple Mounting Options Available
- 20MPH Wind Rating

## DETAILS:

- Smooth & Easy Crank Lift
- Extruded Aluinum Mast
- Commercial Tilt Locking





**Frankford Eclipse 10' Square Cantilever Umbrella**

Lead Time: 28 days

Item #:  
US-617-8GKCM

2786.68

1.00

2,786.68

**Item Options**

Canopy Fabric: To Be Determined  
Mounting Option: To Be Determined

**Features:**

- Multiple tilt levels
- Marine grade fabric guarantees longevity
- Anodized aluminum means no rust, no paint to flake
- Maximize your space and shade with no center post
- Easy to use
- Full 360° rotation
- Folds into a compact vertical format
- Can be removed for seasonal storage

**Permanent Mount Installation Options:**

- In-ground fitting to be concreted into ground
- Base plate bolted to concrete patio or wooden deck



**Frankford Eclipse 13' Cantilever Octagon Umbrella**

Lead Time: 28 days

Item #:  
US-617-FYHNG

2786.68

1.00

2,786.68

**Item Options**

Canopy Fabric: To Be Determined  
Mounting Option: To Be Determined

**Features:**

- Multiple tilt levels
- Marine grade fabric guarantees longevity
- Anodized aluminum means no rust, no paint to flake

- Maximize your space and shade with no center post
- Easy to use
- Full 360° rotation
- Folds into a compact vertical format
- Can be removed for seasonal storage

**Permanent Mount Installation Options:**

- In-ground fitting to be concreted into ground
- Base plate bolted to concrete patio or wooden deck



Mounting Options for the Eclipse –

Deck Plate (to be installed per specifications on concrete or wood deck) - \$102.92



In-Ground Mount (to be installed under soil or concrete) - \$129.82

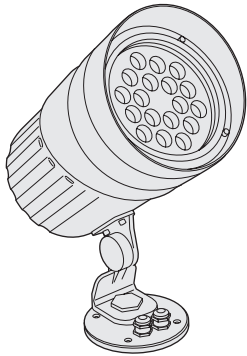


44" Square Galvanized Steel Base - \$1,163.73



Galvanized Steel Bases - \$1,581.77





Client:

Project:

Type:

Order Code:

Quantity:

The **Dyna Accent** is a high output, outdoor rated, LED flood fixture. It features internal DMX & RDM drivers, Aria wireless built directly into the unit, a 100-277VAC auto switching power supply, and a swappable spread lens system. Available in multiple color temperatures of white and color changing version, it is ideal for outdoor facade wash and landscape work.

## SPECIFICATIONS

Color Temperature	2700K, 3000K, 3500K, 4000K, DW (2400K-5500K), RGBW, RGBA
Beam Angle	6° (standard), 20°, 40°, 60°, 10° x 60° spread lens options
Total Lumens	1423 at 4000K, 6°
Center Beam Candela	54,665 at 4000K, 6°
Control	DMX / RDM, 0-10V via external UDM, RDM Addressing via XMT-350, Wireless via Aria system
Max Fixtures in Series	32, via DMX-512
Mounting	Base mounts to standard 4" round electrical box (by others)
Power Consumption	35W at steady state
Operating Voltage	100-277VAC, 50/60Hz
Lumen Maintenance	L70 @ 150,000 Hours (25° C)
Finish	Gray (Standard), White, Black or Custom (Optional)
Housing Material	Die Cast Aluminum, Optional Marine Environment Coating Available
Operating Temperature	-40° F to 122° F (-40° C to 50° C)
IP Rating	IP66, Wet Location
Fixture Connectors	Attached 5' (1.5m) IP 66 AC Power + Signal Cable
Warranty	5 Year Limited Warranty
Weight	9.2 lbs (4.17 kg)
Dimensions	ø 6.3" x H 10.6" (ø 160 x 268mm)

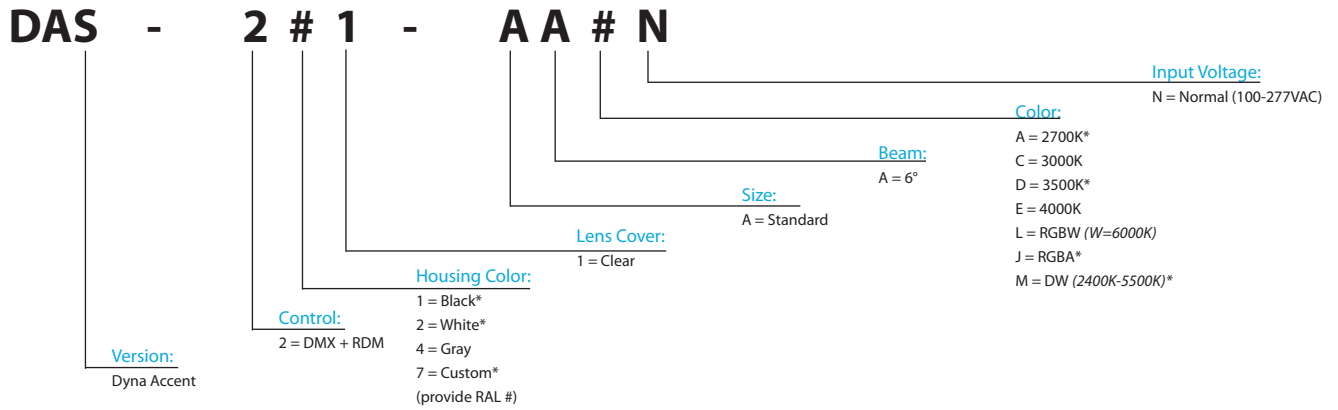
Certifications





## ORDER CODES

\* Indicates Special Order

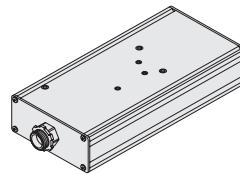


## RELATED COMPONENTS



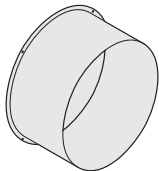
### Spread Lenses

20° Beam: DASSL20  
40° Beam: DASSL40  
60° Beam: DASSL60  
10° x 60° Beam: DASSL1060



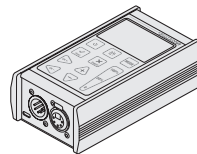
### UDM

Converts 0-10V (sink or source) to DMX  
100-277VAC Input



### Full Snoot

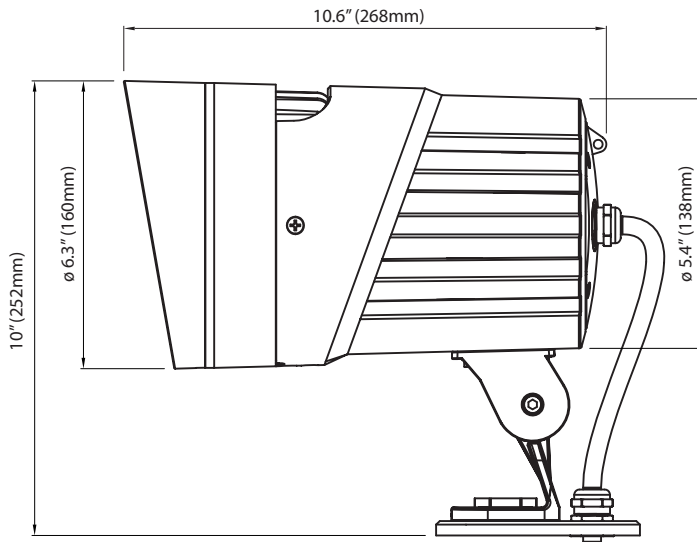
Gray: DAFSG  
Black: DAFSB  
White: DAFSW  
Custom: DAFSC (provide RAL #)



### XMT350

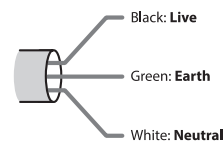
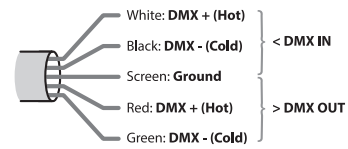
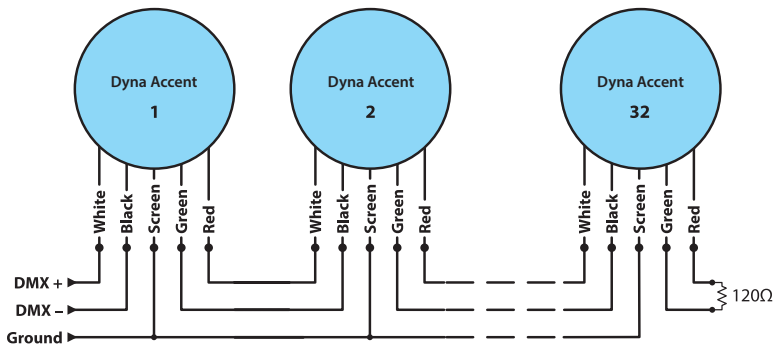
DMX+RDM Addressing and Testing Tool  
9V Battery Included

## DIMENSIONS

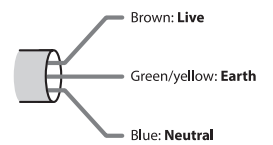


## WIRING

For details on using the Aria Wireless DMX System, please consult the user guides



Power cord colors  
US version



Power cord colors  
European version

## PHOTOMETRICS

For IES & Revit files, please visit [acclaimlighting.com](http://acclaimlighting.com)

Color Temp	Lumens	Center Candela	Efficacy (l/pw)	CRI (Ra)	CRI (r9)
4000K	1423	54,665	40.87	81.3	11.6



320W Constant Voltage + Constant Current LED Driver

# HLG-320H series



SELV IP65 IP67



CBC CE

## Features

- Constant Voltage + Constant Current mode output
- Metal housing with class I design
- Built-in active PFC function
- IP67 / IP65 rating for indoor or outdoor installations
- Function options: output adjustable via potentiometer; 3 in 1 dimming
- Typical lifetime > 62000 hours
- 7 years warranty

## Applications

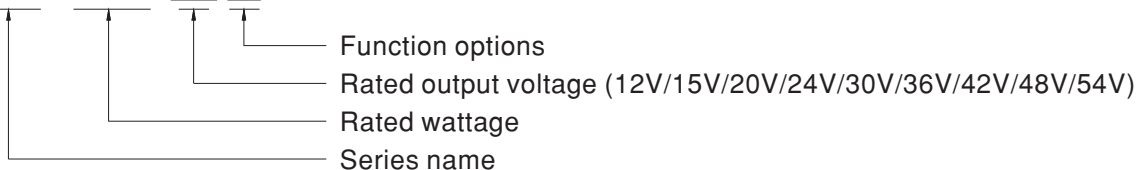
- LED street lighting
- LED high-bay lighting
- Parking space lighting
- LED fishing lamp
- LED greenhouse lighting
- Type "HL" for use in Class I , Division 2 hazardous (Classified) location.

## Description

HLG-320H series is a 320W AC/DC LED driver featuring the dual mode constant voltage and constant current output. HLG-320H operates from 90 ~ 305VAC and offers models with different rated voltage ranging between 12V and 54V. Thanks to the high efficiency up to 94%, with the fanless design, the entire series is able to operate for -40°C ~ +90°C case temperature under free air convection. The design of metal housing and IP67/IP65 ingress protection level allows this series to fit both indoor and outdoor applications. HLG-320H is equipped with various function options, such as dimming methodologies, so as to provide the optimal design flexibility for LED lighting system.

## Model Encoding

HLG - 320H - 15 A



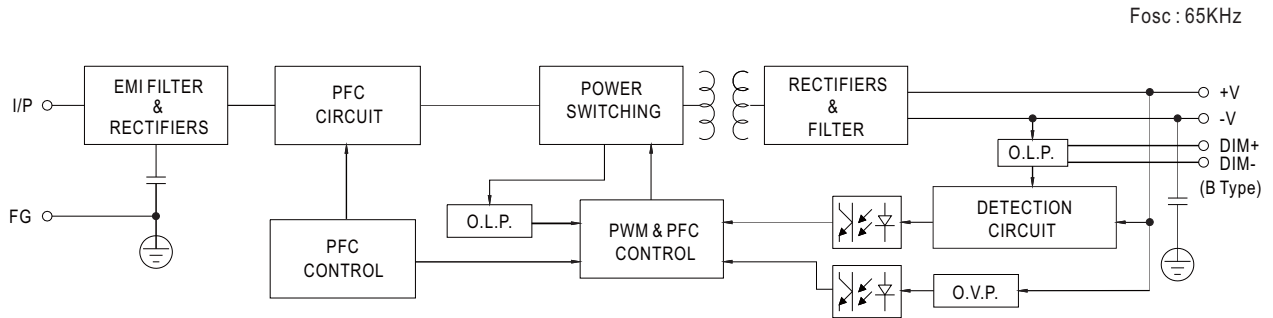
Type	IP Level	Function	Note
Blank	IP67	Io and Vo fixed	In Stock
A	IP65	Io and Vo adjustable through built-in potentiometer	In Stock
B	IP67	3 in 1 dimming function (1~10VDC, 10V PWM signal and resistance)	In Stock
C	-----	Terminal block for I/O connection. Output voltage and constant current level can be adjusted through internal potentiometer.	By request
D	IP67	Timer dimming function, contact MEAN WELL for details(safety pending).	By request



**SPECIFICATION**

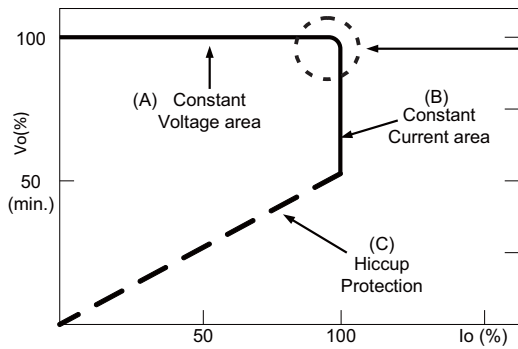
MODEL		HLG-320H-12	HLG-320H-15	HLG-320H-20	HLG-320H-24	HLG-320H-30	HLG-320H-36	HLG-320H-42	HLG-320H-48	HLG-320H-54	
OUTPUT	DC VOLTAGE	12V	15V	20V	24V	30V	36V	42V	48V	54V	
	CONSTANT CURRENT REGION <small>Note.4</small>	6 ~ 12V	7.5 ~ 15V	10 ~ 20V	12 ~ 24V	15 ~ 30V	18 ~ 36V	21 ~ 42V	24 ~ 48V	27 ~ 54V	
	RATED CURRENT	22A	19A	15A	13.34A	10.7A	8.9A	7.65A	6.7A	5.95A	
	RATED POWER	264W	285W	300W	320.16W	321W	320.4W	321.3W	321.6W	321.3W	
	RIPPLE & NOISE (max.) <small>Note.2</small>	150mVp-p	150mVp-p	150mVp-p	150mVp-p	200mVp-p	250mVp-p	250mVp-p	250mVp-p	350mVp-p	
	VOLTAGE ADJ. RANGE	Adjustable for A/C-Type only (via built-in potentiometer)									
		10.8 ~ 13.5V	13.5 ~ 17V	17 ~ 22V	21 ~ 26V	26 ~ 32V	32 ~ 39V	38 ~ 45V	43 ~ 52V	49 ~ 58V	
	CURRENT ADJ. RANGE	Adjustable for A/C-Type only (via built-in potentiometer)									
		11 ~ 22A	9.5 ~ 19A	7.5 ~ 15A	6.67 ~ 13.34A	5.35 ~ 10.7A	4.45 ~ 8.9A	3.8 ~ 7.65A	3.35 ~ 6.7A	2.97 ~ 5.95A	
	VOLTAGE TOLERANCE <small>Note.3</small>	± 3.0%	± 2.0%	± 1.5%	± 1.0%	± 1.0%	± 1.0%	± 1.0%	± 1.0%	± 1.0%	
	LINE REGULATION	± 0.5%	± 0.5%	± 0.5%	± 0.5%	± 0.5%	± 0.5%	± 0.5%	± 0.5%	± 0.5%	
	LOAD REGULATION	± 2.0%	± 1.5%	± 1.0%	± 0.5%	± 0.5%	± 0.5%	± 0.5%	± 0.5%	± 0.5%	
SETUP, RISE TIME <small>Note.6</small>	2500ms, 80ms/115VAC 500ms, 80ms/230VAC										
HOLD UP TIME (Typ.)	15ms / 115VAC, 230VAC										
INPUT	VOLTAGE RANGE <small>Note.5</small>	90 ~ 305VAC 127 ~ 431VDC (Please refer to "STATIC CHARACTERISTIC" section)									
	FREQUENCY RANGE	47 ~ 63Hz									
	POWER FACTOR (Typ.)	PF ≥ 0.98/115VAC, PF ≥ 0.95/230VAC, PF ≥ 0.94/277VAC @ full load (Please refer to "POWER FACTOR (PF) CHARACTERISTIC" section)									
	TOTAL HARMONIC DISTORTION	THD < 20% (@ load ≥ 50% / 115VAC, 230VAC; @ load ≥ 75% / 277VAC) (Please refer to "TOTAL HARMONIC DISTORTION (THD)" section)									
	EFFICIENCY (Typ.) (230VAC)	91%	92.5%	93.5%	94%	94%	94.5%	95%	95%	95%	
	EFFICIENCY (Typ.) (277VAC)	91.5%	93%	94%	94.5%	94.5%	95%	95%	95%	95%	
	AC CURRENT (Typ.)	3.5A / 115VAC			1.65A / 230VAC			1.45A / 277VAC			
	INRUSH CURRENT(Typ.)	COLD START 70A(t <sub>width</sub> =1010μs measured at 50% I <sub>peak</sub> ) at 230VAC; Per NEMA 410									
	MAX. No. of PSUs on 16A CIRCUIT BREAKER	1 unit (circuit breaker of type B) / 2 units (circuit breaker of type C) at 230VAC									
	LEAKAGE CURRENT	< 0.75mA / 277VAC									
PROTECTION	OVER CURRENT <small>Note.4</small>	95 ~ 108% Constant current limiting, recovers automatically after fault condition is removed									
	SHORT CIRCUIT	Hiccup mode, recovers automatically after fault condition is removed									
	OVER VOLTAGE	14 ~ 17V	17.5 ~ 21V	22.5 ~ 27V	27 ~ 33V	33 ~ 37V	40 ~ 46V	46.5 ~ 53V	53.5 ~ 60V	59 ~ 65V	
		Shut down and latch off o/p voltage, re-power on to recover									
	OVER TEMPERATURE	Shut down and latch off o/p voltage, re-power on to recover									
ENVIRONMENT	WORKING TEMP.	T <sub>case</sub> = -40 ~ +90°C (Please refer to "OUTPUT LOAD vs TEMPERATURE" section)									
	MAX. CASE TEMP.	T <sub>case</sub> = +90°C									
	WORKING HUMIDITY	20 ~ 95% RH non-condensing									
	STORAGE TEMP., HUMIDITY	-40 ~ +80°C, 10 ~ 95% RH									
	TEMP. COEFFICIENT	± 0.03%/°C (0 ~ 50°C)									
	VIBRATION	10 ~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes									
SAFETY & EMC	SAFETY STANDARDS <small>Note.8</small>	UL8750(type"HL"), CSA C22.2 No. 250.0-08; TUV EN61347-1, EN61347-2-13 independent; IP65 or IP67 (except for HLG-320H C-type); J61347-1, J61347-2-13 (except for HLG-320H C-type) approved									
	WITHSTAND VOLTAGE	I/P-O/P: 3.75KVAC I/P-FG: 2KVAC O/P-FG: 1.5KVAC									
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG: 100M Ohms / 500VDC / 25°C / 70% RH									
	EMC EMISSION <small>Note.8</small>	Compliance to EN55015, EN55022 (CISPR22) Class B, EN61000-3-2 Class C (@ load ≥ 50%); EN61000-3-3									
	EMC IMMUNITY	Compliance to EN61000-4-2, 3, 4, 5, 6, 8, 11, EN61547, EN55024, light industry level (surge immunity Line-Earth 4KV, Line-Line 2KV)									
OTHERS	MTBF	157.1K hrs min. MIL-HDBK-217F (25°C)									
	DIMENSION	252*90*43.8mm (L*W*H)									
	PACKING	1.88Kg; 8pcs/16Kg/0.92CUFT									
NOTE	<ol style="list-style-type: none"> <li>All parameters NOT specially mentioned are measured at 230VAC input, rated current and 25°C of ambient temperature.</li> <li>Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf &amp; 47uf parallel capacitor.</li> <li>Tolerance : includes set up tolerance, line regulation and load regulation.</li> <li>Please refer to "DRIVING METHODS OF LED MODULE".</li> <li>De-rating may be needed under low input voltages. Please refer to "STATIC CHARACTERISTIC" sections for details.</li> <li>Length of set up time is measured at first cold start. Turning ON/OFF the driver may lead to increase of the set up time.</li> <li>The driver is considered as a component that will be operated in combination with final equipment. Since EMC performance will be affected by the complete installation, the final equipment manufacturers must re-qualify EMC Directive on the complete installation again.</li> <li>The model certified for CCC(GB19510.14, GB19510.1, GB17743 and GB17625.1) is an optional model . Please contact MEAN WELL for details.</li> <li>To fulfill requirements of the latest ErP regulation for lighting fixtures, this LED driver can only be used behind a switch without permanently connected to the mains.</li> <li>This series meets the typical life expectancy of &gt;62,000 hours of operation when T<sub>case</sub>, particularly (T<sub>c</sub>) point (or TMP, per DLC), is about 75°C or less.</li> <li>Please refer to the warranty statement on MEAN WELL's website at <a href="http://www.meanwell.com">http://www.meanwell.com</a></li> </ol>										

## ■ BLOCK DIAGRAM



## ■ DRIVING METHODS OF LED MODULE

※ This series is able to work in either Constant Current mode (a direct drive way) or Constant Voltage mode (usually through additional DC/DC driver) to drive the LEDs.

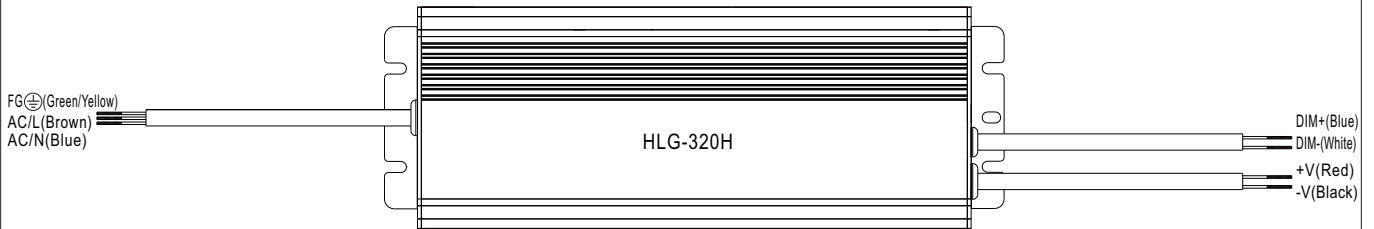


Typical output current normalized by rated current (%)

In the constant current region, the highest voltage at the output of the driver depends on the configuration of the end systems.

Should there be any compatibility issues, please contact MEAN WELL.

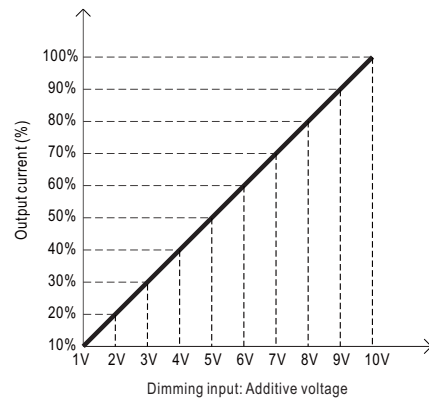
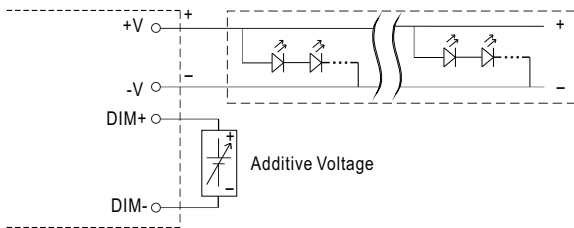
## DIMMING OPERATION



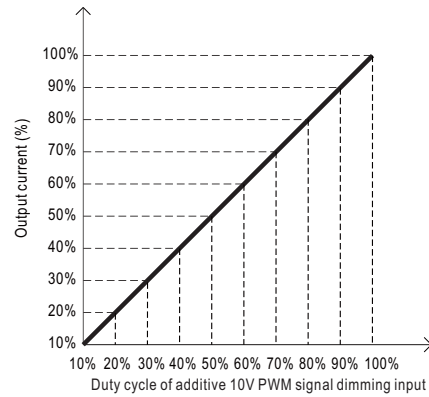
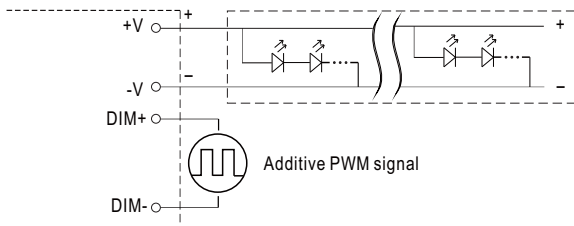
### ※ 3 in 1 dimming function (for B-Type)

- Output constant current level can be adjusted by applying one of the three methodologies between DIM+ and DIM-: 1 ~ 10VDC, or 10V PWM signal or resistance.
- Direct connecting to LEDs is suggested. It is not suitable to be used with additional drivers.
- Dimming source current from power supply: 100 $\mu$ A (typ.)

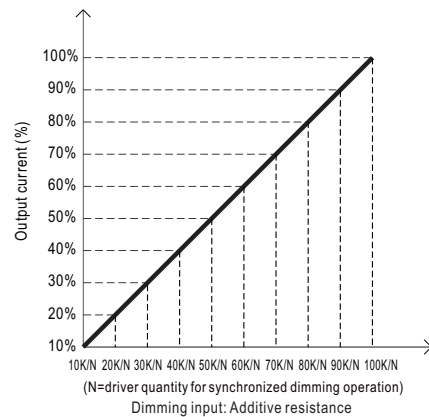
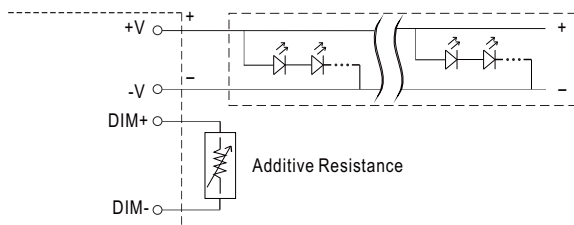
◎ Applying additive 1 ~ 10VDC



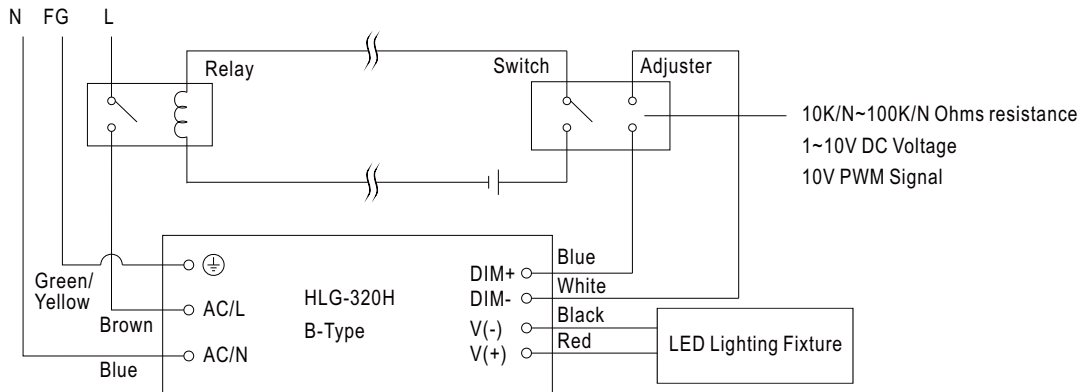
◎ Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):



◎ Applying additive resistance:

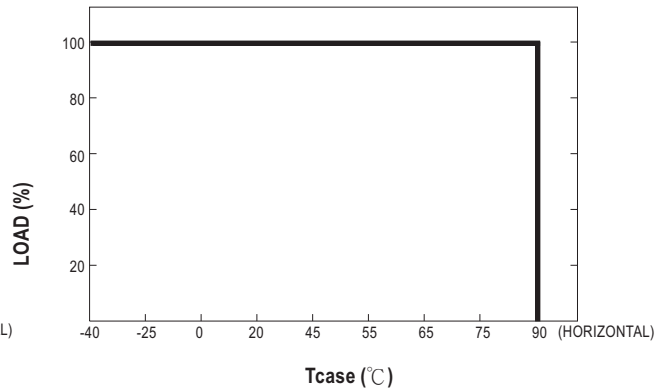
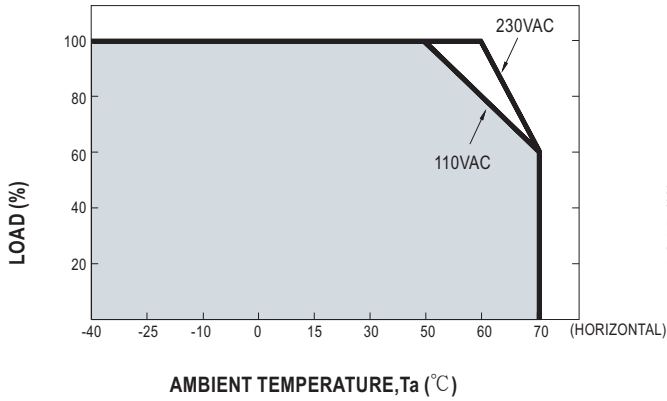


Note: In the case of turning the lighting fixture down to 0% brightness, please refer to the configuration as follow, or please contact MEAN WELL for other options.

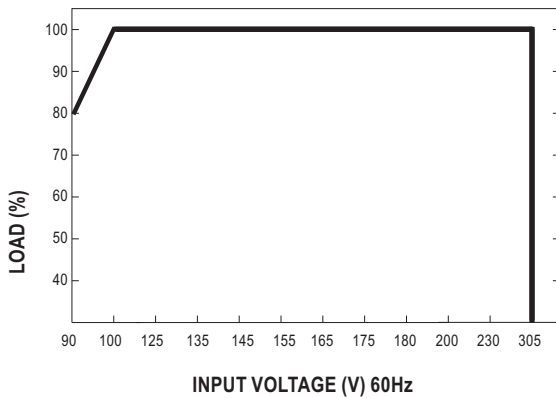


Using a switch and relay can turn ON/OFF the lighting fixture.

### OUTPUT LOAD vs TEMPERATURE

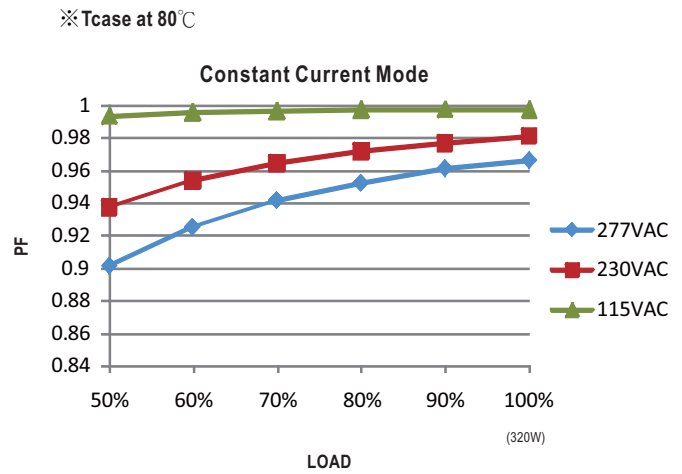


### STATIC CHARACTERISTICS



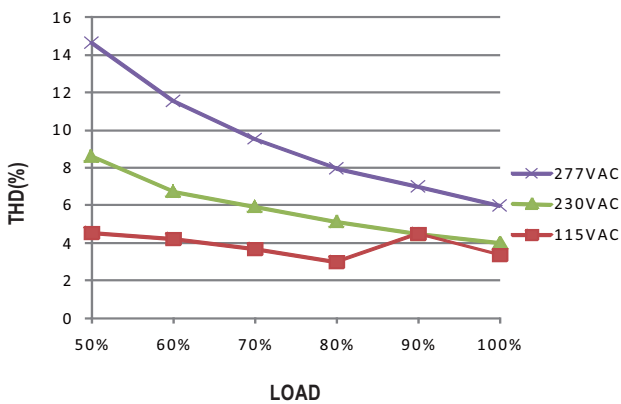
※ De-rating is needed under low input voltage.

### POWER FACTOR(PF) CHARACTERISTIC



### TOTAL HARMONIC DISTORTION (THD)

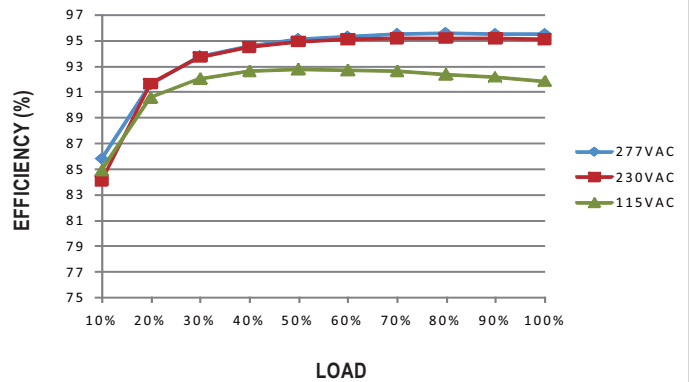
※ 48V Model, Tcase at 80°C



### EFFICIENCY vs LOAD

HLG-320H series possess superior working efficiency that up to 95% can be reached in field applications.

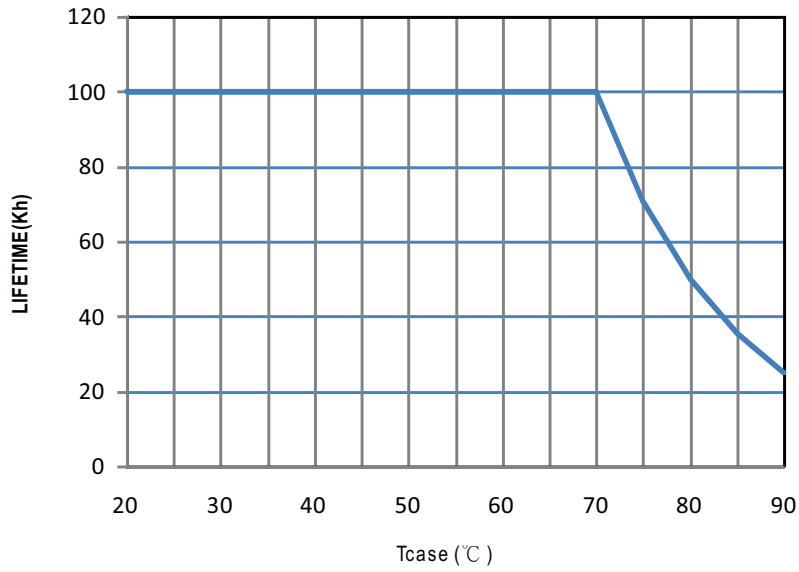
※ 48V Model, Tcase at 80°C







■ LIFETIME



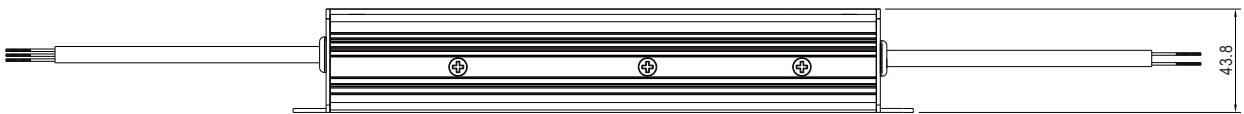
**MECHANICAL SPECIFICATION**

Case No.202A Unit:mm

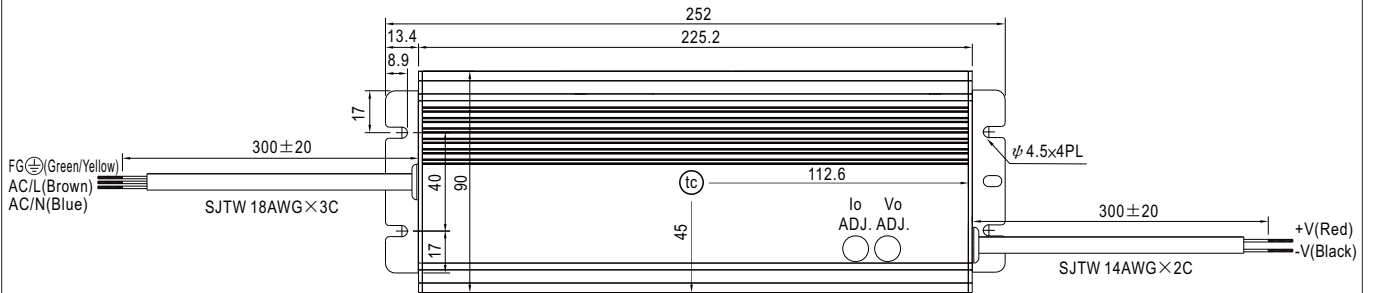
※Blank/D-Type



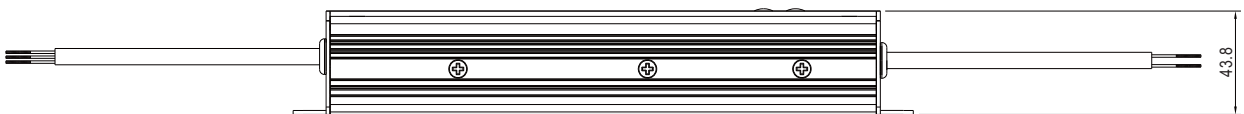
• (tc) : Max. Case Temperature



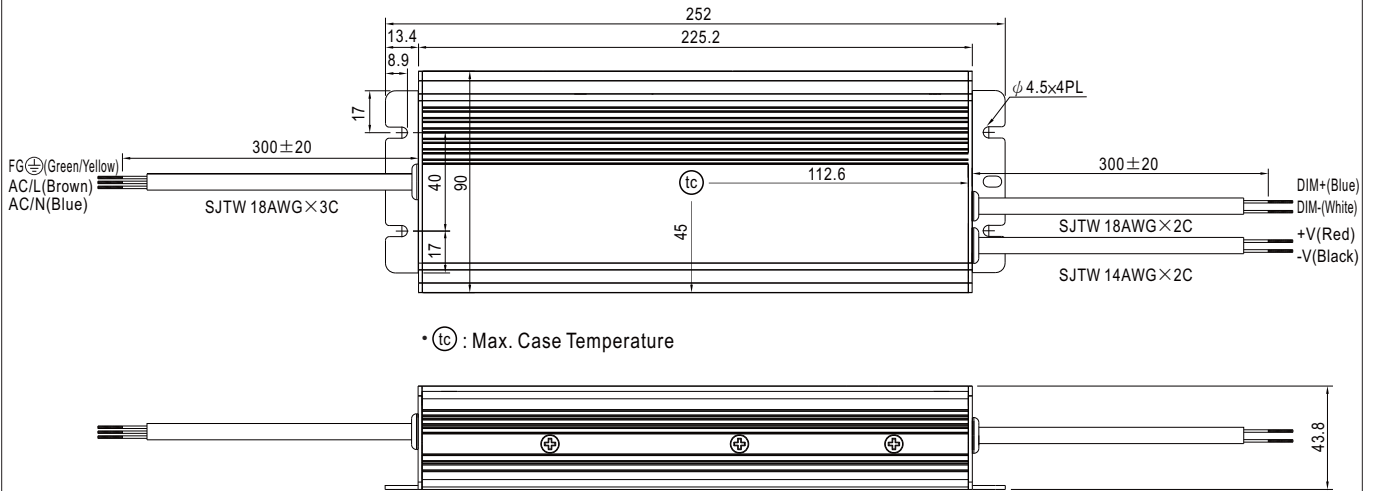
※A-Type



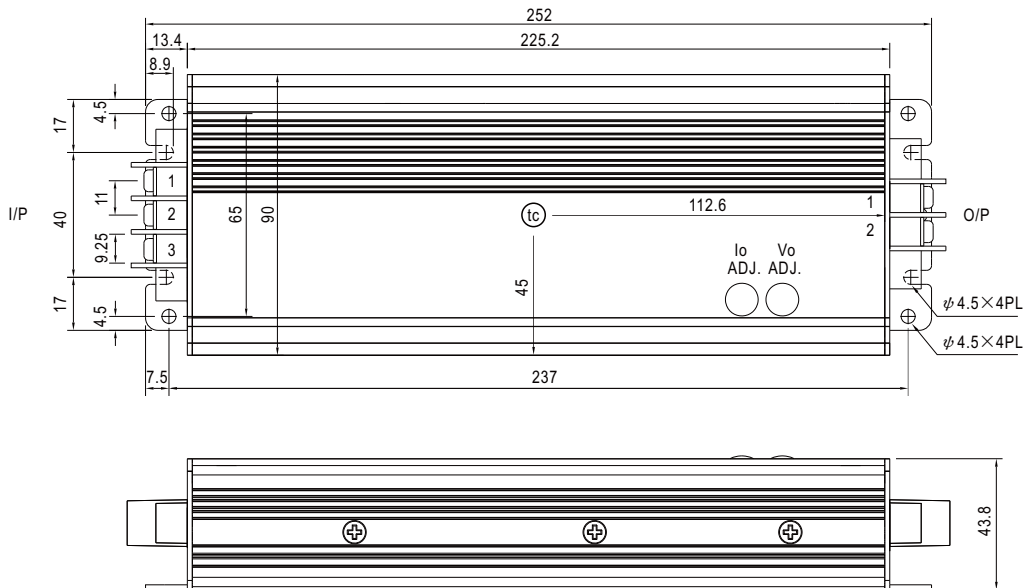
• (tc) : Max. Case Temperature



※B-Type



※C-Type



AC Input Terminal Pin No. Assignment

Pin No.	Assignment
1	FG $\perp$
2	AC/L
3	AC/N

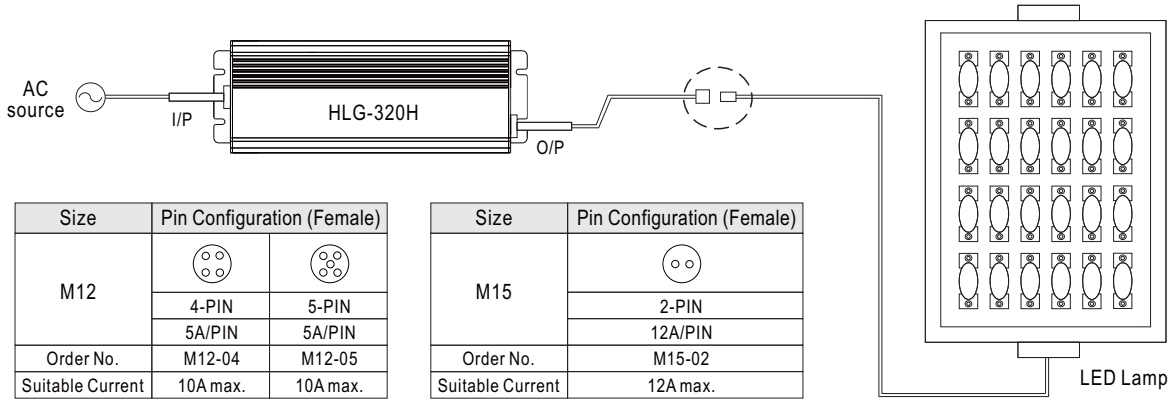
DC Output Terminal Pin No. Assignment

Pin No.	Assignment
1	+V
2	-V

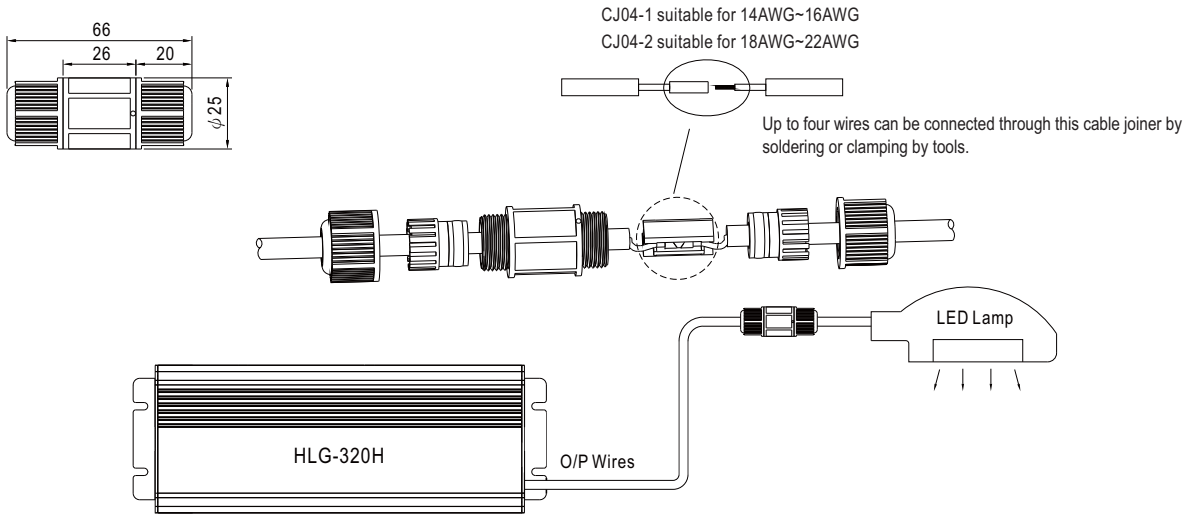
## WATERPROOF CONNECTION

### Waterproof connector

Waterproof connector can be assembled on the output cable of HLG-320H to operate in dry/wet/damp or outdoor environment.

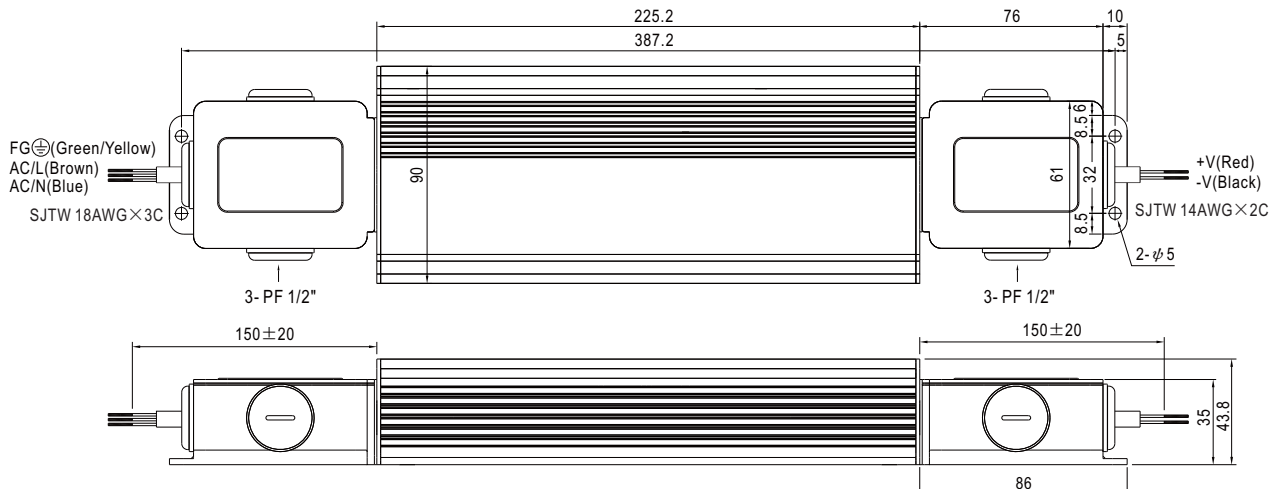


### Cable Joiner



◎ CJ04 cable joiner can be purchased independently for user's own assembly.  
MEAN WELL order No. : CJ04-1, CJ04-2.

### Junction Box Option



◎ Junction box option is available for A / Blank - Type. Please contact MEAN WELL for details.

## INSTALLATION MANUAL

Please refer to : <http://www.meanwell.com/webnet/search/InstallationSearch.html>

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## Mean Well:

[HLG-320H-12](#) [HLG-320H-12A](#) [HLG-320H-12B](#) [HLG-320H-12C](#) [HLG-320H-12D](#) [HLG-320H-15](#) [HLG-320H-15A](#)  
[HLG-320H-15B](#) [HLG-320H-15C](#) [HLG-320H-15D](#) [HLG-320H-20](#) [HLG-320H-20A](#) [HLG-320H-20B](#) [HLG-320H-20C](#)  
[HLG-320H-20D](#) [HLG-320H-24](#) [HLG-320H-24A](#) [HLG-320H-24B](#) [HLG-320H-24C](#) [HLG-320H-24D](#) [HLG-320H-30](#)  
[HLG-320H-30A](#) [HLG-320H-30B](#) [HLG-320H-30C](#) [HLG-320H-30D](#) [HLG-320H-36](#) [HLG-320H-36A](#) [HLG-320H-36B](#)  
[HLG-320H-36C](#) [HLG-320H-36D](#) [HLG-320H-42](#) [HLG-320H-42A](#) [HLG-320H-42B](#) [HLG-320H-42C](#) [HLG-320H-42D](#)  
[HLG-320H-48](#) [HLG-320H-48A](#) [HLG-320H-48B](#) [HLG-320H-48C](#) [HLG-320H-48D](#) [HLG-320H-54](#) [HLG-320H-54A](#)  
[HLG-320H-54B](#) [HLG-320H-54C](#) [HLG-320H-54D](#) [HLG-320H-C1750](#) [HLG-320H-C3500](#) [HLG-320H-C2800](#) [HLG-320H-C1050](#) [HLG-320H-C2100](#) [HLG-320H-C1400](#) [HLG-320H-C700](#)

**NEW**

# Rack Enclosures

Protect your electronics, DVRs, game consoles, and rack mountable equipment from vandals and Mother Nature!

Note: The 12RU rack and mounting hardware are included. Pictured at right and below with Mier's optional BW-RMD1 Rack-Drawer, BW-3RU Rack Shelf, and BW-5RU Rack-Shelf installed in the rack. (DVRs shown in these photos are installation examples only and are not included)

- External dimensions: 22"W x 24"/12RU H x 24"D
- Internal dimensions: 21.5"W x 23.5"H x 24"D
- Internal rack: 19"W x 12RU H x 20"D

## Outdoor BW-RACKACHT (AC and Heat)

NEMA 4 enclosure includes a 2000 BTU AC unit, 500-watt heater, thermostat, filters, gaskets, and an internal 19" rack. Power Requirement: 120 volts AC. Draw: 17 amps at start-up, 7 amps running. AC/Heater unit dimensions: 10"W x 20"H x 10"D

## Outdoor BW-RACK8ACHT

Same enclosure with smaller 800 BTU AC unit & 150-watt heater

## Outdoor BW-RACKACE (AC)

NEMA 4 enclosure includes a 2000 BTU AC unit, thermostat, filters, gaskets, and an internal 19" rack. Power Requirement: 120 volts AC. Draw: 17 amps at start-up, 7 amps running. AC unit dimensions: 10"W x 20"H x 10"D

## Outdoor BW-RACK8ACE

same enclosure with smaller 800 BTU AC unit

## Outdoor BW-RACKFC (fan ventilated)

NEMA 3R enclosure includes a 315 cubic foot/min. fan, filters, rain shrouds, gaskets, and an internal 19" rack and thermostat. Power Requirement: 120 volts AC. Draw: .5 amps running. Rain shroud dimensions: 9.5"W x 11"H x 7.5"D Fan dimensions: 5"W x 5"H x 3"D

**ATTENTION:** To keep NEMA Ratings on the enclosures listed above, installers must strictly follow the OEM installation instructions and must use water-tight fittings on all openings.

## Indoor BW-RACKBOX (fan ventilated)

Includes a 315 cubic foot/min. fan, and an internal 19" rack. Power Requirement: 120 volts AC. Draw: .5 amps running.

## Indoor BW-RACKCART (fan ventilated)

A BW-RACKBOX (as listed above) with the addition of four wheels.

## Indoors or Outdoors



## Rack Accessories

### Indoor BW-230

- 16.625"W x 8"H x 24"D
- Approximately 5RU
- Rated at 100 lb capacity
- 120V continuous-duty fan
- Includes mounting ears and hardware

### Indoor BW-235

- 16.625"W x 5"H x 24"D
- Approximately 3RU
- Rated at 50 lb capacity
- 120V continuous-duty fan
- Includes mounting ears and hardware



### BW-5RU Rack-Mount Shelf

- 19"W x 8"H x 24"D
- Includes mounting ears and hardware

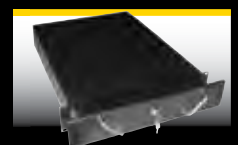
### BW-3RU Rack-Mount Shelf

- 19"W x 5"H x 24"D
- Includes mounting ears and hardware

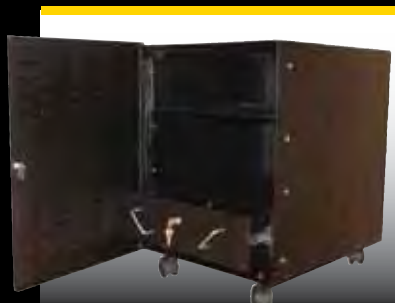


### BW-RMD1 Rack-Mount Drawer

- 19"W x 4"H x 24"D
- Approximately 3RU
- Store remotes, instructions, and materials for your rack equipment on site and under lock and key!



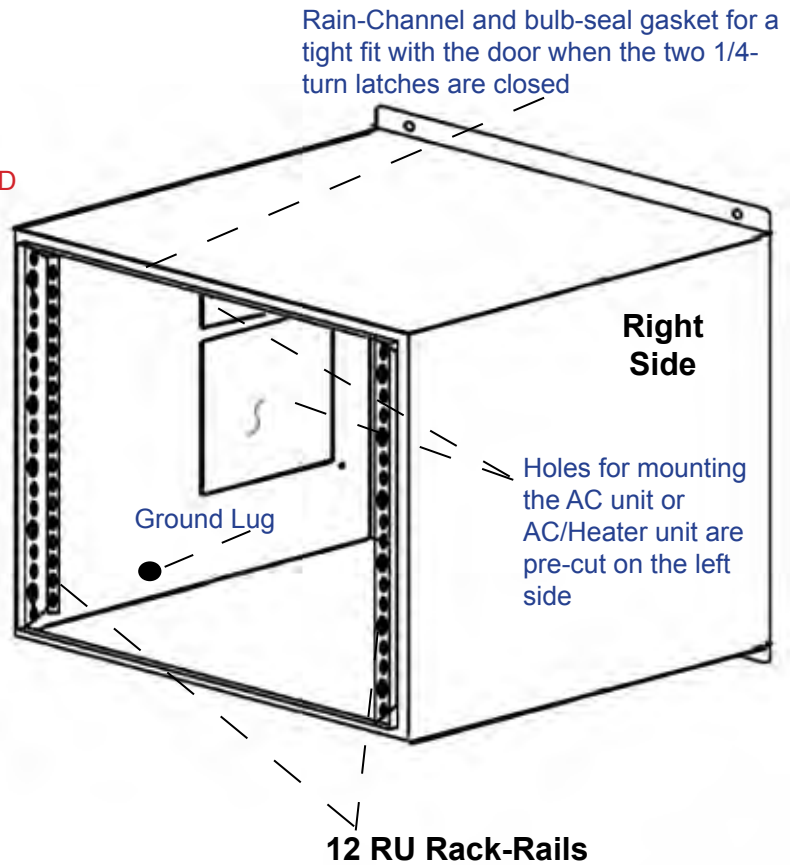
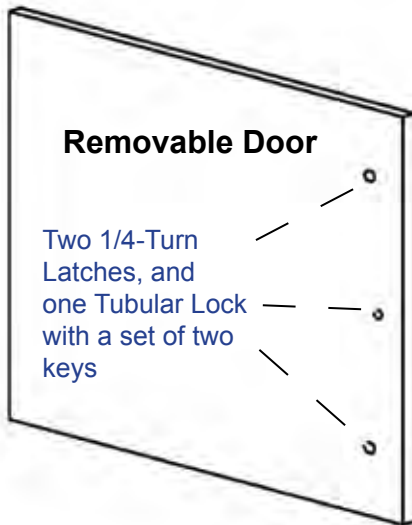
Add a "W" at the end of these part numbers for an optional window in the door.



# BW-RACKACE and BW-RACKAHT

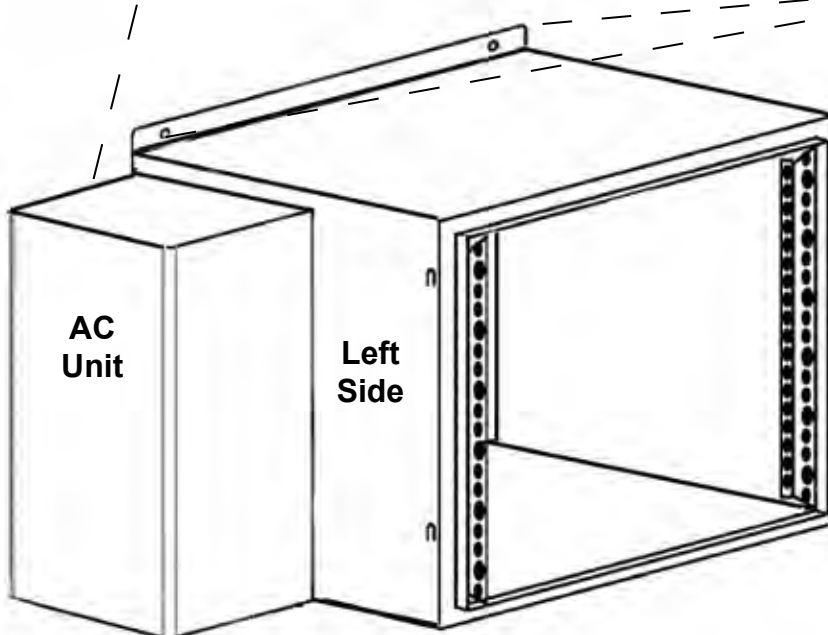
## Dimensions and Weight

- Outside dimensions *without* AC attached: 22"W x 24"H x 24"D
- Outside dimensions *with* AC unit attached are: 33"W x 24"H x 24"D
- Inside dimensions are: 21.5"W x 23.7"H x 23.8"D
- Rack rails are 12RU, 19" wide
- Enclosure weighs 105 lbs
- AC unit weighs 60 lbs
- Shipping skid weighs 45 lbs



BW-RACKACE and BW-RACKAHT with AC unit or AC & Heater unit attached on the left-hand side

External 0.580" mounting hole dimensions are: 20" center-to-center from left to right and 25 3/8" center-to-center from top to bottom



### Mounting options

- Wall-Mount
- Free-Standing using angle-iron or pole-iron and a concrete slab (pictured)
- Pole-Mount using angle iron

