WIRE REINFORCEMENT INSTITUTE®

Technical Roundtable

Engineering and Contracting

Perspectives on the Use of Welded Wire Reinforcement in Tilt-Up Concrete Wall Panels

The economy and versatility of welded wire reinforcement (WWR) is a natural fit for concrete building construction, a market in which concrete contractors are always seeking to streamline the allocation of worker resources and duration of the placing and concreting operations. WWR is a structural reinforcement that exists to improve and expedite the buildability of a concrete structure, and perhaps nowhere is this more evident than in tilt-up wall panel buildings.

The Wire Reinforcement Institute (WRI) sat down with professionals from both sides of the table to get perspectives and insights on WWR as the preferred reinforcement solution for tilt-up wall panel projects.

The Contributing Innovators

KOPF CONSULTING GROUP
Structural Engineering Consultants

REINFORCING CONCEPTS

Excellence Set in Concrete®

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July 2023

Philip Kopf, PE, FTCA

Phil is a practicing structural engineer and the founder and owner of Kopf Consulting Group, Inc., a firm specializing in design-build construction. In this capacity, he works closely with owners, architects, and contractors through each phase of design and construction to achieve overall building economy and constructability.

Phil's vast experience in structural design of industrial and commercial buildings is evidenced by his broad portfolio of projects throughout the United States and the Caribbean. With over two decades of experience serving a wide range of clients, Kopf has special expertise in design/build fast-track design and construction techniques.

Kopf has distinguished himself and been recognized as an industry expert in tilt-up panel design and construction, winning numerous accolades through the Tilt-Up Concrete Association (TCA), including the David L. Kelly Distinguished Engineer Award as well as assorted project-specific recognition in the form achievement awards.

Through his experience, he has gained an exceptional understanding of the demands that mechanical, conveying systems, and other industrial equipment can have on a project. With the totality of all project costs taken into consideration, Kopf has the unique ability to blend the different structural components into an efficient and economized building envelope.

Travis Tracy

Travis is a partner in Reinforcing Concepts, LLC, a distributor of custom WWR that specializes in rebar-to-WWR conversions, WWR design, and shop drawing services, and he is also the owner of WWR Placement, LLC, a reinforcement installation company.

Travis received his Bachelor of Science degree in Civil / Structural Engineering from the Rochester Institute of Technology and has since been in the reinforcement placement business for over twenty-five years. In addition to his continued success in expanding the business through strengthened customer relationships, he continues to be heavily involved in both the installation and material conversion aspects of the work.

Reinforcing Concepts prides itself on turnkey WWR project solutions, with proficiency in the following areas:

- **Reinforcement Detailing**: Reinforcing Concepts is heavily staffed to prepare submittal drawings consisting of WWR and rebar details, layouts, and placement requirements that are used for engineer and contractor review and subsequent on-site installation.
- **Reinforcement Conversion**: In those instances for which a project's original structural design utilizes reinforcing bar (rebar) configurations exclusively, Reinforcing Concepts can collaborate with a project's Engineer-of-Record to carry out value-added "conversion services" that derive equivalent, code-compliant WWR solutions.
- **Reinforcement Installation**: Reinforcing Concepts deploys placement crews and equipment to carry out the turnkey installation of project reinforcement packages, working closely with the prime contractor to ensure a seamless and expedited on-site effort that maximizes savings related to time and labor expenditure.

Phil and Travis were kind enough to take the time to provide detailed feedback on a broad range of WRI questions intended to demystify WWR usage for the engineering and contracting audiences. The details of this discussion are summarized below.

During the construction document (CD) phase of this project, were you faced with any design or detailing challenges that were specific to the WWR material usage itself?

Phil Kopf:

From an engineering perspective, the most important aspect of incorporating WWR into a design project is to think of it as the primary solution. Specifically, as it relates to tilt-up construction, the stiffness of the wall panel is directly related to the reinforcing steel area. It follows, then, that WWR with a comparatively higher yield strength can have a lower cross-sectional area of steel demand. Therefore, if a lower cross-sectional area of steel is utilized in comparison to that which is originally specified, the result is higher secondary deflections and possibly higher secondary P-delta moments. With this in mind, the contractor can always convert an 80 ksi WWR design project down to a 60 ksi conventional loose rebar reinforced solution without a need for the Engineer of Record to re-design the wall panels. In contrast, converting a 60 ksi conventional loose bar solution to an 80 ksi WWR solution requires an additional design to be carried out, as the corresponding reduction in cross-sectional steel area does change the panel deflection and secondary moment magnitudes.

Beyond the structural design itself, working with the Architect early in the process can prove valuable in creating an efficient WWR solution. It is crucial to place openings and panel joints in patterns that produce as much repetition as possible. Cost efficiencies occur when you minimize the number of different WWR reinforcement sheets.

It is also important in this architectural coordination to be aware of material-specific attributes when utilizing WWR solutions for tilt-up construction. For example, the largest size of wire that can be produced is a D31 (0.310 in^2, essentially equivalent to a #5 rebar). Additionally, there is a practical minimum spacing of 2” center to center for the wires. This, in turn, can limit the maximum amount of reinforcement that can be placed in a wall panel jamb. If you are approaching the spatial limits of the WWR solution, you should, in turn, investigate the use of a higher-strength concrete, thickening the wall panel, or increasing the panel jamb dimension.

How involved was your firm in the process of defining the specific WWR mat geometries utilized in the project's structural applications?

Is this an attribute you built directly into your structural drawings, or did you specify the material in general terms and let the WWR fabricator's detailer handle the rest based on your prescriptive requirements?

Phil Kopf:

We don't define specific WWR mat geometries for the WWR fabricator. We want the WWR fabricator to utilize their skills to produce the most efficient solution possible. We give them general guidance parameters that they need to adhere to and then let them provide the mat geometries and sizing that best suits the project requirements. The information that we provide gives the WWR fabricator the required area of steel for each area of a wall panel. Reinforcement requirements are provided by typical wall panel reinforcement elevations (Figure 1 and Figure 2), a reinforcement schedule (Figure 3), and panel reinforcement general notes (Figure 4).

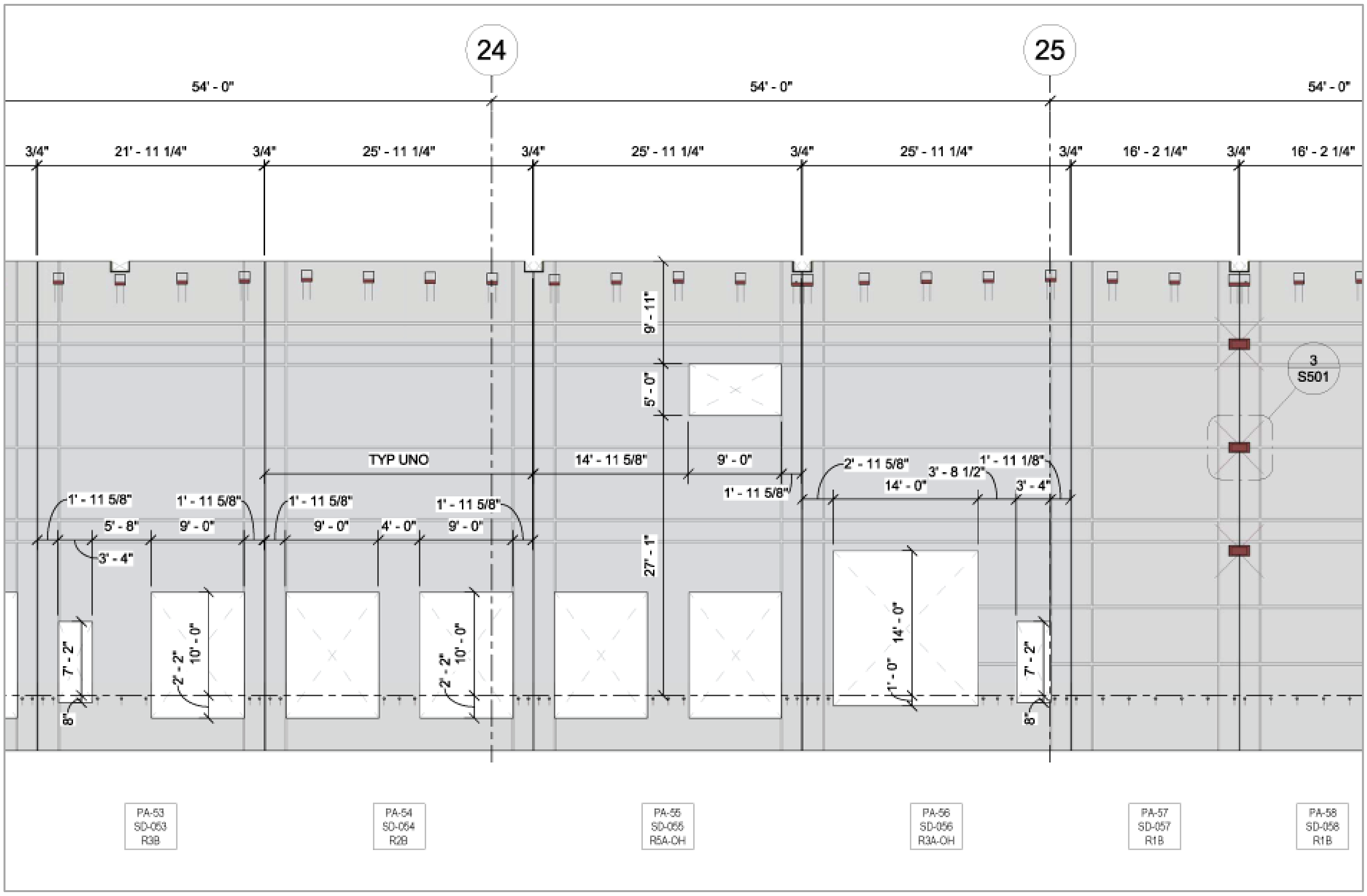
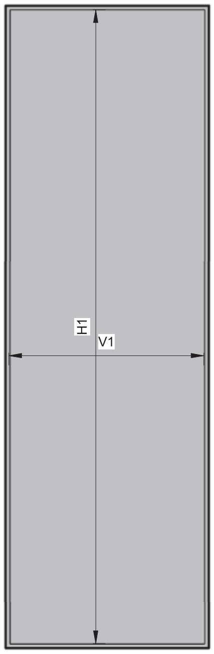
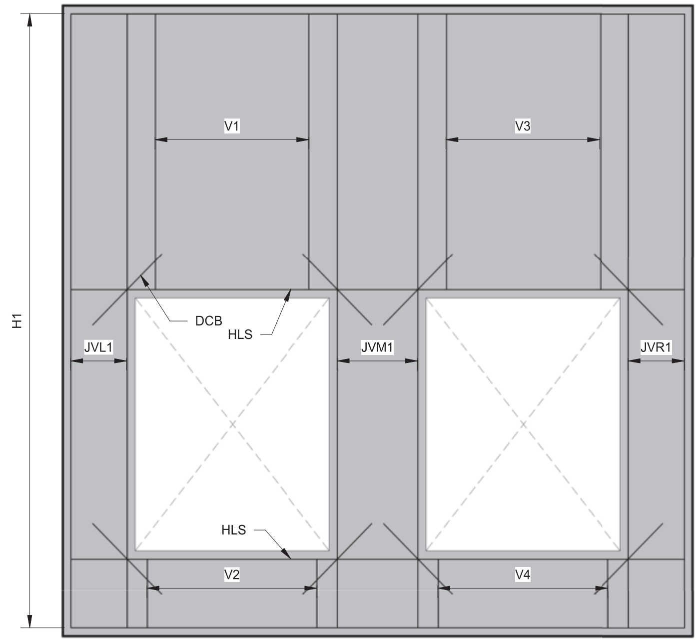


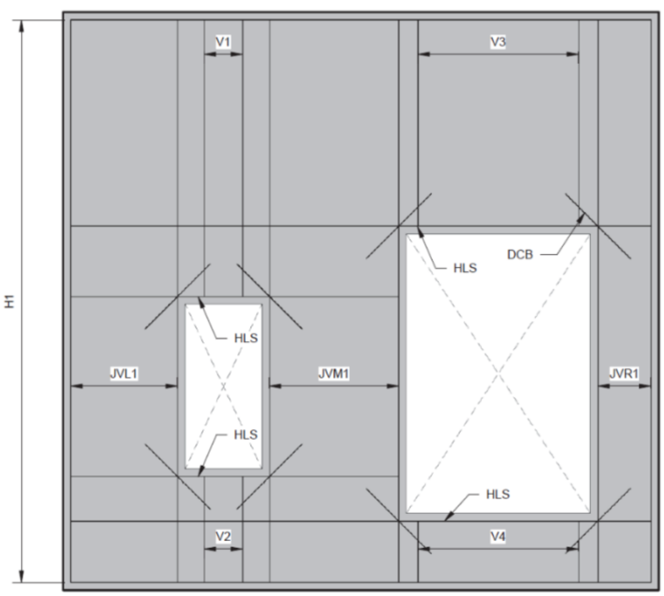
Figure 1: Typical wall panel elevation example



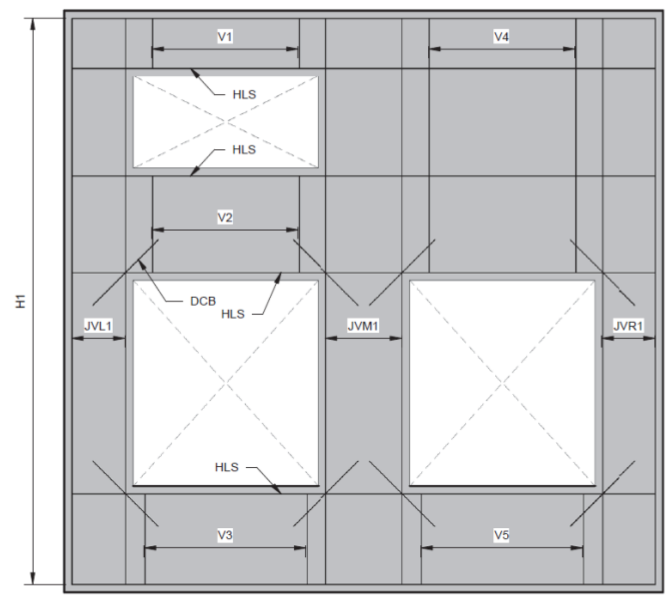
1 PANEL REINF DETAIL R1
1/4" = 1'-0"



2 PANEL REINFORCEMENT DETAIL R2
1/4" = 1'-0"



3 PANEL REINFORCEMENT DETAIL R3
1/4" = 1'-0"



5 PANEL REINFORCEMENT DETAIL R5
1/4" = 1'-0"

Figure 2: Reference wall panel reinforcement elevation examples

These elevations provide a critical link between the project wall panel elevation geometry shown in Figure 1 and the corresponding reinforcement requirements shown in Figure 3.

REINF MARK	BAR MARK	MIN. AREA OF GRADE 80 ksi REBAR REQUIRED	REINF LAYER
R1A	V1	0.24 in^2/ft each face	LAYER 1/4
	H1	D20 @ 18" c/c each face	LAYER 2/3
R1B	V1	0.20 in^2/ft each face	LAYER 1/4
	H1	D20 @ 18" c/c each face	LAYER 2/3
R2A	V1, V2	0.24 in^2/ft each face	LAYER 1/4
	H1	D20 @ 18" c/c each face	LAYER 2/3
	JVL1, JVR1	1.40 in^2 each face	LAYER 1/4
	JVM1	2.80 in^2 each face	LAYER 1/4
	DCB	(2)D20 bars x 5'-0" - 1/2 each face	LAYER 1/4
	HLS	(2) D20 bars - 1/2 each face	LAYER 2/3
R2B	V1, V2	0.20 in^2/ft each face	LAYER 1/4
	H1	D20 @ 18" c/c each face	LAYER 2/3
	JVL1, JVR1	1.63 in^2 each face	LAYER 1/4
	JVM1	3.26 in^2 each face	LAYER 1/4
	DCB	(2)D20 bars x 5'-0" - 1/2 each face	LAYER 1/4
	HLS	(2) D20 bars - 1/2 each face	LAYER 2/3
R3A	V1 thru V4	0.20 in^2/ft each face	LAYER 1/4
	H1	D20 @ 18" c/c each face	LAYER 2/3
	JVL1	0.78 in^2	LAYER 1/4
	JVM1	3.40 in^2	LAYER 1/4
	JVR1	2.60 in^2	LAYER 1/4
	DCB	(2)D20 bars x 5'-0" - 1/2 each face	LAYER 1/4
	HLS	(2) D20 bars - 1/2 each face	LAYER 2/3
R3B	V1 thru V4	0.20 in^2/ft each face	LAYER 1/4
	H1	D20 @ 18" c/c each face	LAYER 2/3
	JVL1	0.85 in^2	LAYER 1/4
	JVM1	2.40 in^2	LAYER 1/4
	JVR1	1.63 in^2	LAYER 1/4
	DCB	(2)D20 bars x 5'-0" - 1/2 each face	LAYER 1/4
	HLS	(2) D20 bars - 1/2 each face	LAYER 2/3
R4A	V1 thru V3	0.20 in^2/ft each face	LAYER 1/4
	H1	D20 @ 18" c/c each face	LAYER 2/3
	JVL1, JVR1	1.63 in^2 each face	LAYER 1/4
	DCB	(2)D20 bars x 5'-0" - 1/2 each face	LAYER 2/3
	HLS	(2) D20 bars - 1/2 each face	LAYER 2/3
R5A	V1 thru V5	0.20 in^2/ft each face	LAYER 1/4
	H1	D20 @ 18" c/c each face	LAYER 2/3
	JVL1, JVR1	1.63 in^2 each face	LAYER 1/4
	JVM1	3.26 in^2 each face	LAYER 1/4
	DCB	(2)D20 bars x 5'-0" - 1/2 each face	LAYER 2/3
	HLS	(2) D20 bars - 1/2 each face	LAYER 2/3

Figure 3: Reinforcement schedule example

Note how the engineer specifies the required 80 ksi reinforcement in terms of minimum cross-sectional areas or via direct identification of a quantity or spacing of explicitly-defined wire size.

PANEL REINFORCEMENT GENERAL NOTES

1. **REINFORCING STEEL**
   A. ALL REINFORCING STEEL SHALL BE GRADE 80 KSI HIGH STRENGTH STEEL @0.35% STRAIN
   B. DEVELOPMENT AND LAP SPLICES SHALL BE CALCULATED PER ACI 318-14 SECTION 25.4 AND 25.5
   C. ALL WELDED WIRE MATERIAL TO BE DEFORMED WIRE MESH MANUFACTURED IN SHEETS PER ASTM A1064
   D. MAXIMUM SPACING OF REINFORCING STEEL SHALL BE 18" c/c
   E. MINIMUM AREA OF VERTICAL BARS SHALL BE D15
2. **FIELD OF PANEL REINFORCING STEEL** (AREA OF STEEL PER SQUARE FOOT)
   A. THE AREA OF STEEL SHALL BE EVENLY DISTRIBUTED ACROSS THE PANEL.
   B. ADDITIONAL LOOSE BARS SHALL BE EVENLY SPACED ACROSS THE PANEL TO PROVIDE AN EVEN DISTRIBUTION OF THE AREA OF STEEL.
   C. IF ADDITIONAL LOOSE BARS ARE REQUIRED, IT SHALL BE OF A DIAMETER THAT DOES NOT ALTER THE LOCATION OF THE TYPICAL FIELD OF PANEL REINFORCEMENT.
3. **PANEL JAMB REINFORCEMENT AREAS:**
   A. JAMB STEEL SHALL CONSIST OF A SINGLE BAR MAT SHEET IN EACH LAYER.
   B. ADDITIONAL LOOSE BARS ADDED TO THE JAMB AREA MAY BE GROUNDS FOR REJECTION.
   C. UTILIZING TYPICAL FIELD OF PANEL REINFORCING STEEL FOR JAMB AREA STEEL MAY BE GROUNDS FOR REJECTION.
   D. IF THE CENTERLINE OF VERTICAL STEEL IS FARTHER AWAY THAN 3-1/2" FROM A PANEL EDGE, PROVIDE (2) D20 VERTICAL LOOSE STEEL (VLS) BARS 1/2 EF. EXTEND 5'-0" BEYOND EDGE OF OPENING.
4. **MINIMUM COMPRESSIVE STRENGTH**
   A. PANELS SHALL BE 4000 PSI UNO.
   B. WALL PANEL CONCRETE MIX SHALL BE A WELL-BLENDED COARSE AGGREGATE WITH A MAXIMUM TOP SIZE OF 1".
5. **MAXIMUM DEPTH TO REVEAL**
   A. 1/2" MAXIMUM DEPTH REVEAL
6. WALL PANELS HAVE BEEN DESIGNED TO ALLOW THE GENERAL CONTRACTOR TO ERECT THE PANELS THEN ERECT THE ROOF STEEL.
7. ALL PANEL REINFORCING DETAILS ARE VIEWED FROM THE INSIDE FACE OF THE PANEL (IE UPFACE CAST VIEW)
8. REINFORCEMENT CHAIRS SHALL BE ALL PLASTIC.

Figure 4: Panel reinforcement general notes example

Are there any notable adjustments that need to be made to staging and sequence of installation of reinforcement material when utilizing WWR in lieu of reinforcing bars?

Travis Tracy & RCI Team:

Proper equipment and rigging will be needed prior to the delivery of material, including an adequately sized construction telehandler forklift and possibly a spreader beam. (Figures 5 and 6)

Figure 5: Telehandler forklift and spreader beam

For sheets shorter than 20', a set of 4-way chains adequately sized for the weight of the bundles can be used to unload and transport bundles, although a spreader beam will make the task easier. For tilt-up panel WWR sheets that extend up to 52' in length, a larger forklift and an adequately sized spreader beam will be required to unload and transport the material safely. The spreader beam and rigging must be sized accordingly to the material being unloaded and transported.

Figure 6: Telehandler forklift and spreader beam

We always suggest that tilt-up panel WWR sheets be unloaded on the slab if possible since unloading and transporting the material is much safer and easier, and the installation production will increase compared to installing the sheets from outside the building. If it is impossible to unload the WWR inside the building, then the perimeter of the building where the work is being performed - including the accessways from the laydown area - must be flat, stable, and free of obstructions.

Obviously, additional planning and staging are necessary for WWR material compared to that for rebar due to the fact that a larger laydown area is needed (Figure 7). It is important for WWR material bundling and staging to be coordinated such that the sequence of access generally aligns with the placement sequence. This eliminates the need to constantly move material out of the way in order to access material that is next in line for placement. If the site laydown area is limited, the material must be released in sequence order and coordinated with the supplier and shipping prior to delivery.

Figure 7: WWR material bundles in lay-down area

Can you give us a sense of installer sentiment related to the handling and placement of WWR? Is there a noticeable appreciation for some of WWR's "built-in" handling and installation attributes?

Travis Tracy & RCI Team:

Once a crew becomes accustomed to the WWR system, they realize how much easier their job becomes and how much faster they can do their job. The crews always comment that it is similar to putting a puzzle or kit together. Team morale seems higher on the WWR projects since they see production at a faster rate as well as the physical layout. Obviously, the tying and handling operation associated with individual bars is reduced.

We've gotten to the point where our crews are disappointed when they have to install a loose conventional rebar project. The crews appreciate how WWR improves their workdays.

Whether a first-time user of WWR or a continuation of past project experiences with WWR, can you talk a bit about the learning curve and how quickly your team was able to achieve installation proficiency? Were there any pitfalls that in hindsight could have been avoided? Were there any concerns you had at the start about "making the switch to WWR"?

Travis Tracy & RCI Team:

Typically, after the completion of a single project, the install team is able to achieve proficiency with the WWR system.

Worksite organization of the material is paramount to the success of the project. This is typically the biggest obstacle to overcome when starting with the WWR system.

Another attribute that requires some focused attention on the part of the placers is the lapping of the WWR sheets. There may be instances in which the lead installer would contact the WWR detailer to ensure that their understanding of how the sheets are to be arranged on-site will achieve the engineer's design intent as it relates to alignment and lap splices. This coordination helps to avoid placement errors or material shortages.

When we first started in this market, the logistics of unloading the material and moving sheets around the job site was a concern that we focused on. As mentioned earlier, properly-sized equipment, correct rigging, and spreader beams negate this concern.

Can you describe the shop drawing review process for WWR mats and how it might differ from loose reinforcing bar elements?

Phil Kopf:

The shop drawing review process may seem more involved at first. It is not more complicated than a conventional loose reinforcing steel design with a good quality WWR fabricator, panel shop drawings (*Figures 8–13*), and proper design guidance from the engineer of record.

One of the most critical aspects of the review is ensuring that the proper chair heights are utilized (*Figure 13*). To make the process in the field as simple as possible, an engineer should design the wall panels to use only one chair height throughout the project. I don't believe it is reasonable to expect the tilt-up panel contractor to utilize different chair heights for panels with varying diameters of WWR. Since in many instances we are only instructing the WWR fabricator about the area of steel we require in the design, we don't know what diameter wire and spacing they will ultimately choose to provide. Therefore, we will utilize the largest diameter wire that we know they can provide during the design phase. So, we design all the wall panels assuming an effective depth to the reinforcing steel for a D31 bar. One way that we have found to limit the chair height range is to limit the diameter of the bar allowed. We require the WWR fabricator to provide vertical reinforcement in the range of D15 to D31.

There are also times when the fabricated WWR may not provide reinforcement close enough to an opening. In these cases, we advise that additional loose bars should be provided adjacent to the opening. We have found that the practical limit is when a bar or wire is located greater than 3-1/2" away from the edge of an opening, an additional trim bar adjacent to the edge should be provided.

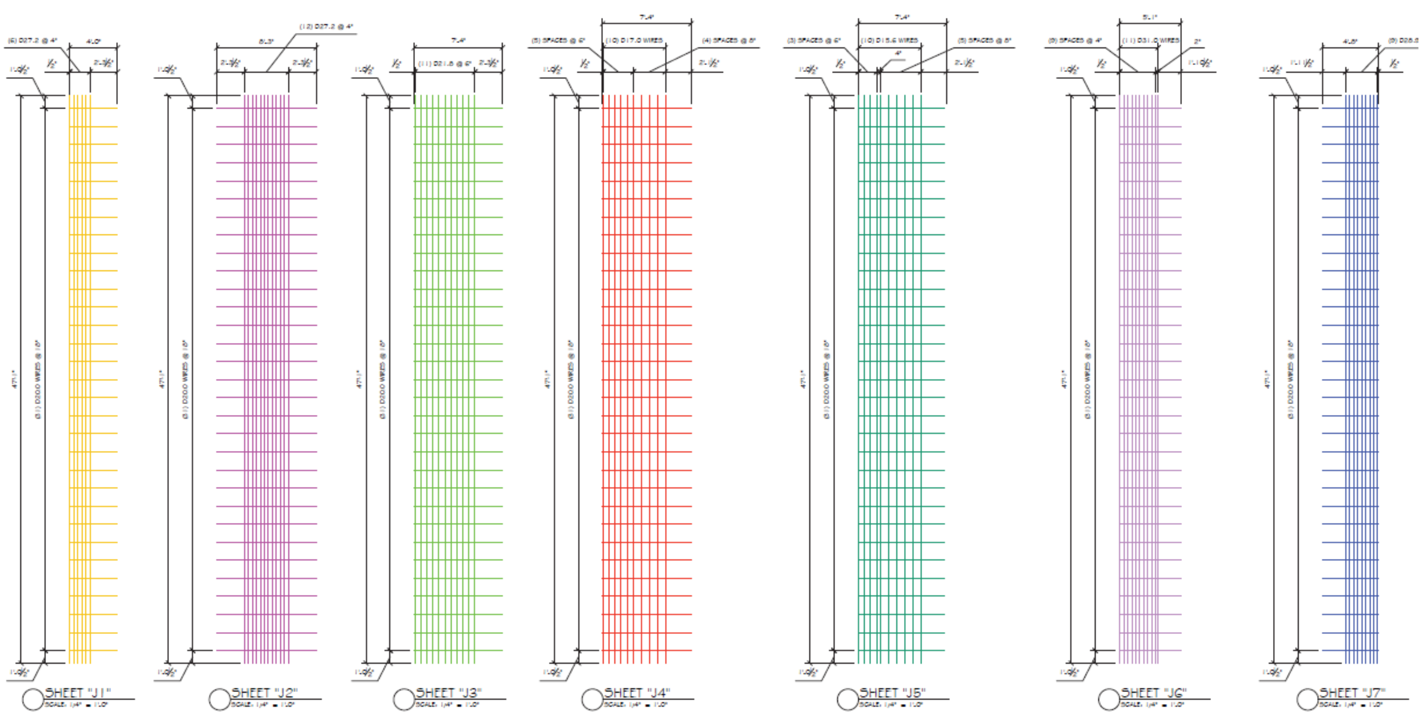


Figure 8: Panel shop drawing excerpt showing individual WWR mats. Color-coding is used to correlate the mats to their respective positioning within the panel form.

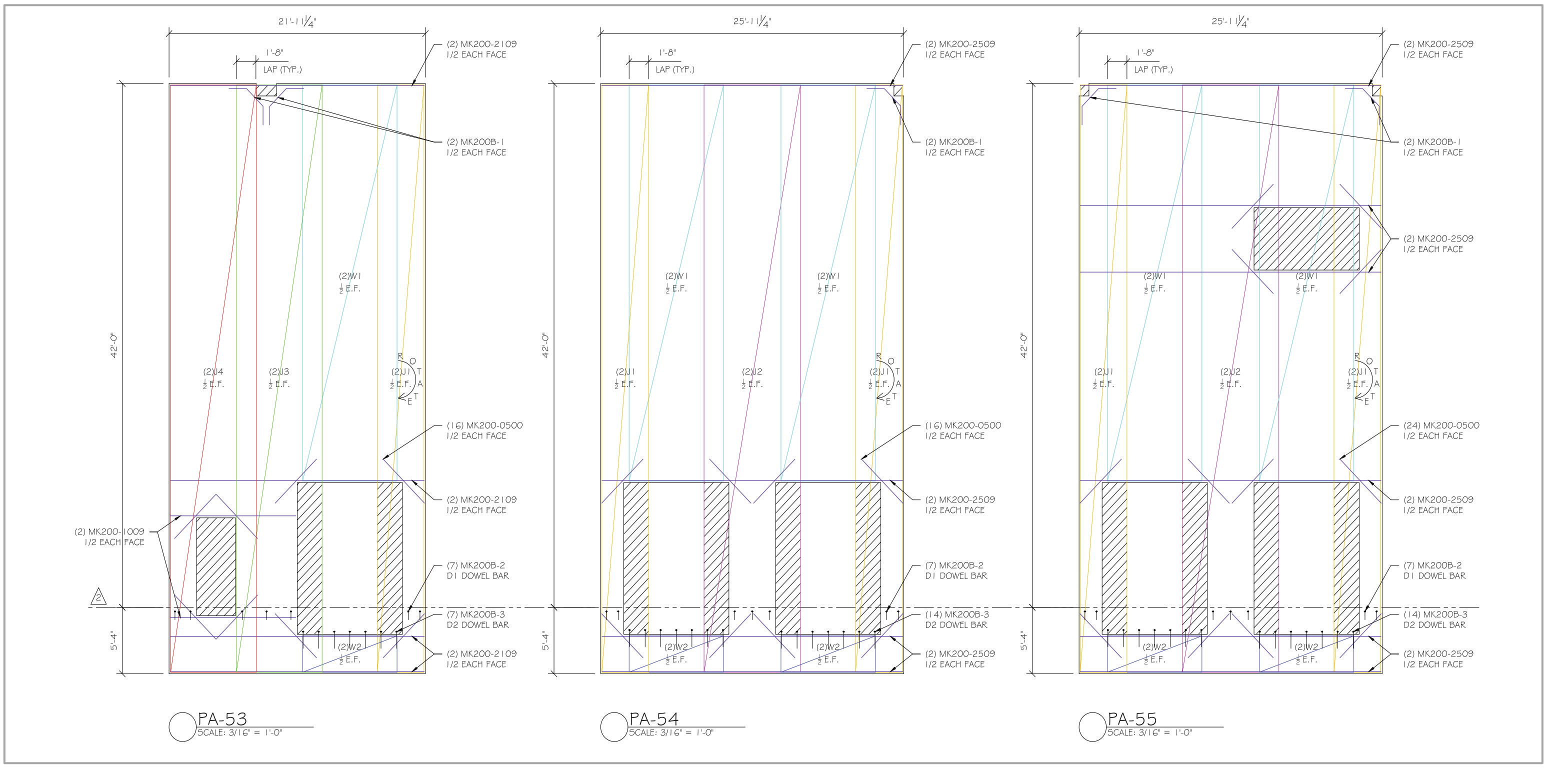


Figure 9: Panel shop drawing excerpt showing placement of WWR mats within the panel.

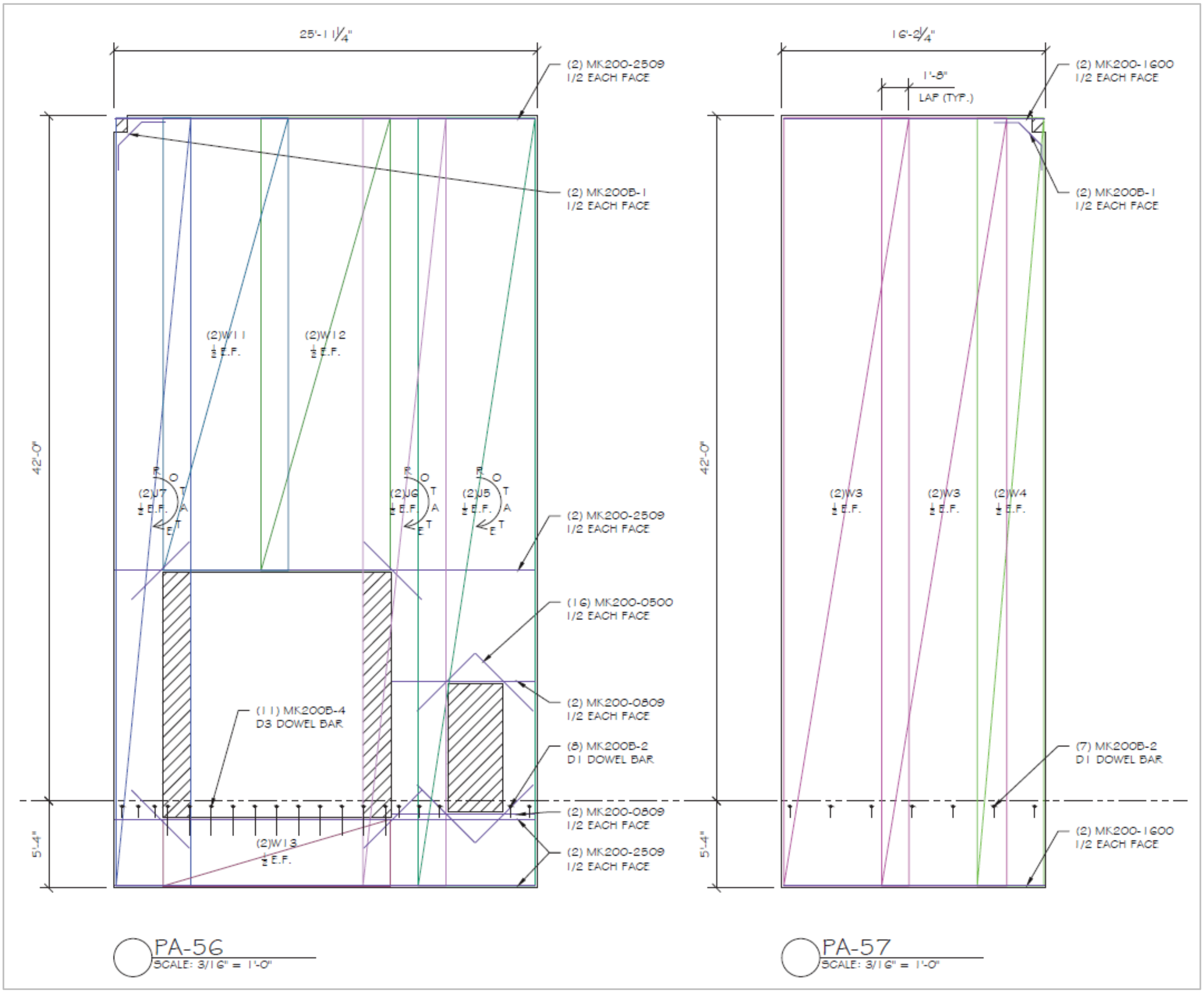


Figure 10: Panel shop drawing excerpt showing placement of WWR mats within the panel.

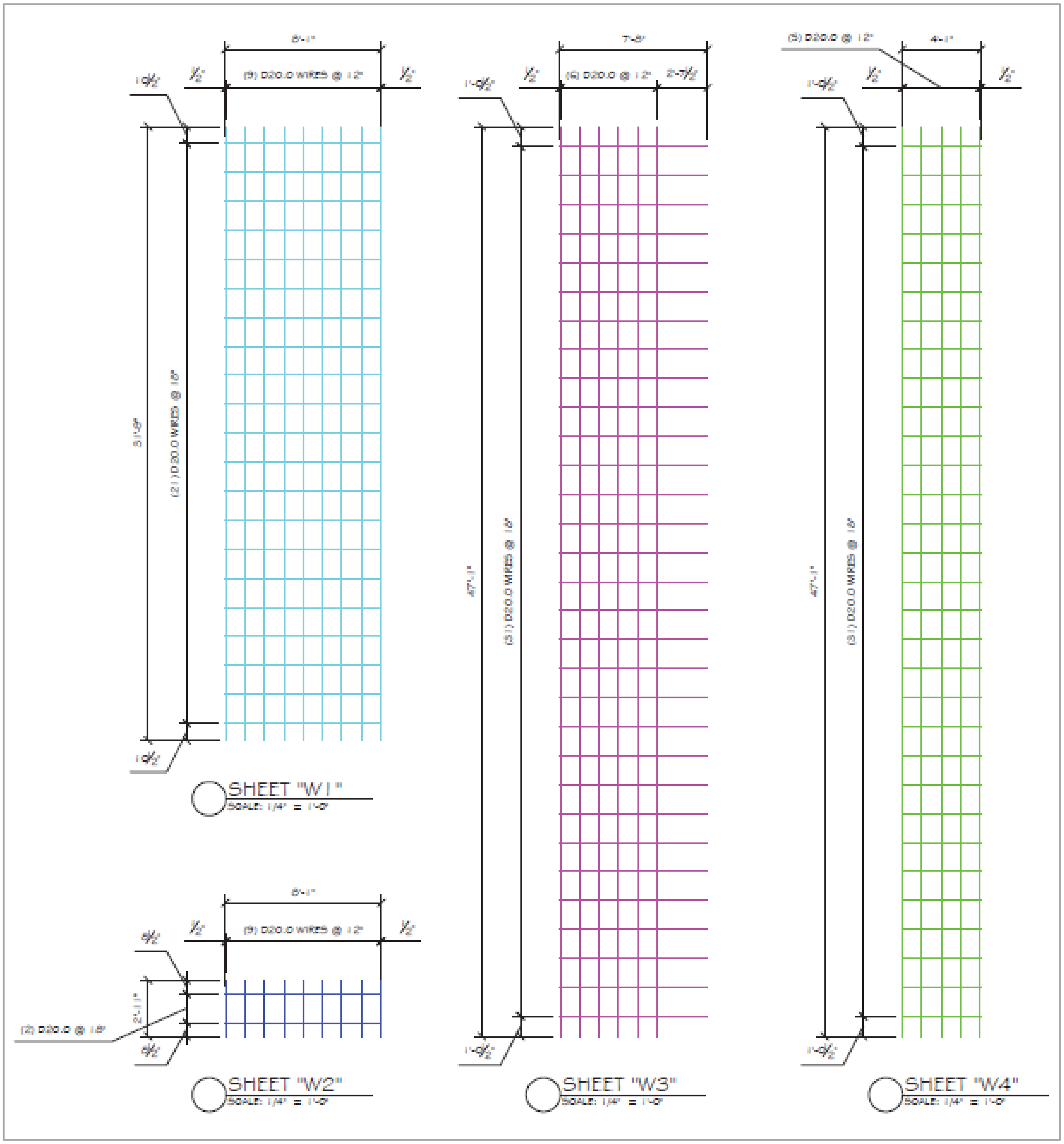


Figure 11: Panel shop drawing excerpt showing enlarged views of selected individual WWR mats.

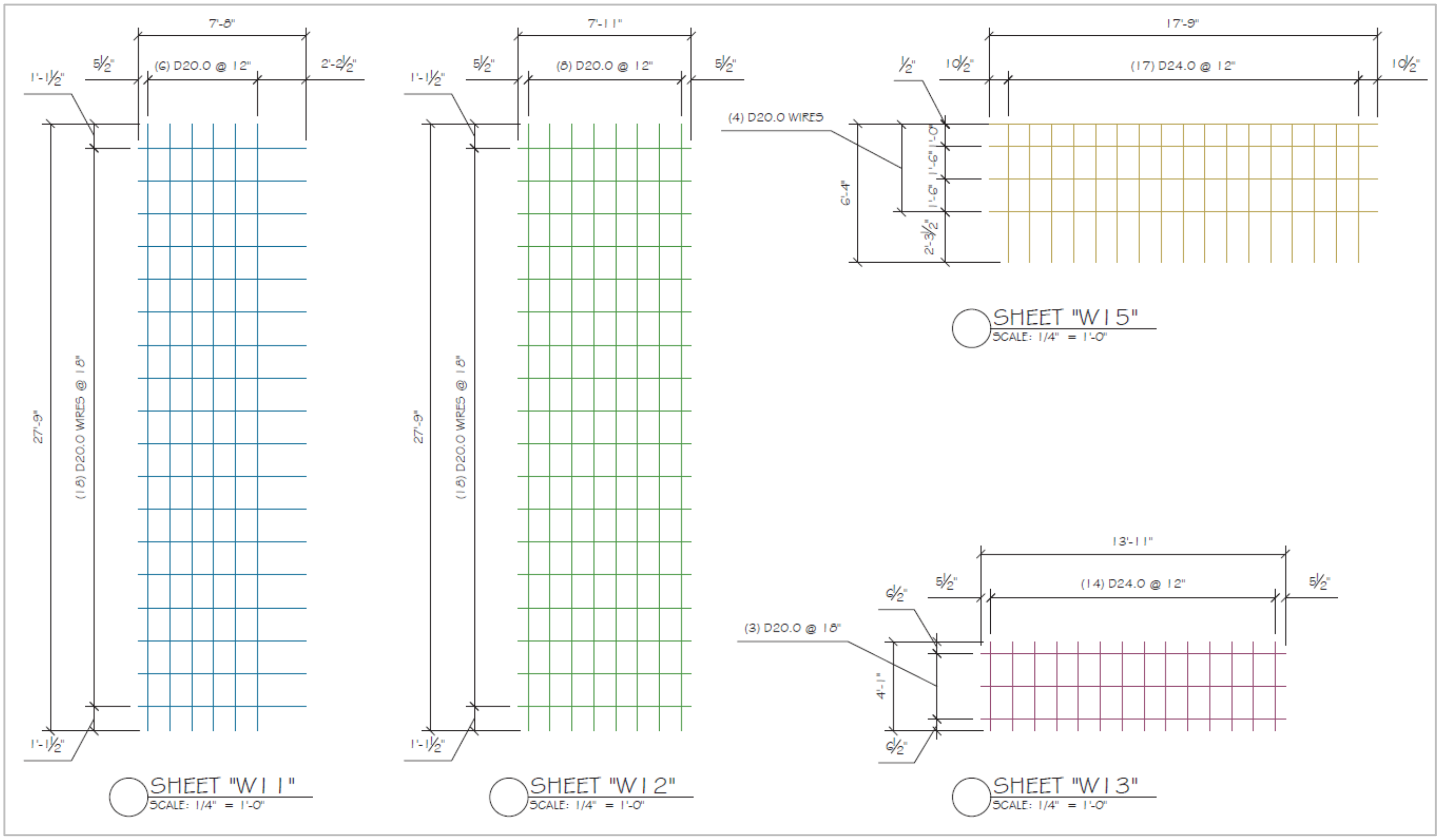


Figure 12: Panel shop drawing excerpt showing enlarged views of selected individual WWR mats.

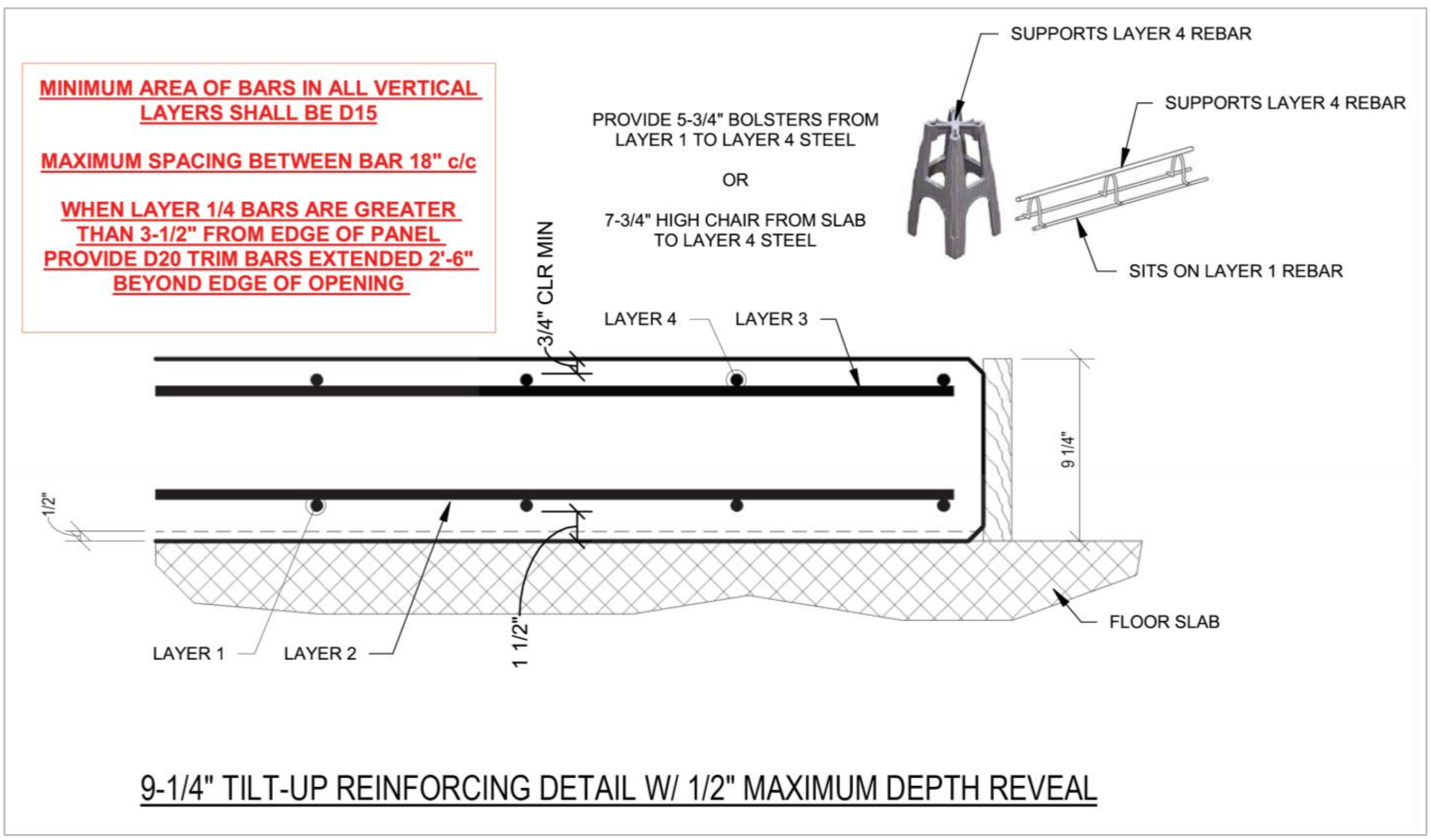


Figure 13: Example of reinforcement layer definitions and related chair/support requirements, as well as wire size and spacing prescriptions. The engineer takes care in the design to account for the "worst-case" effective depth dimension (i.e., an assumption of the largest wire size), in turn simplifying the contractor's chair selection and placement operation.

Can you talk about your interaction with the project designer and any unique collaborations that might have occurred related to taking WWR "from design to job site"?

Travis Tracy & RCI Team:

When we first started converting conventional rebar to WWR, many engineers in the industry were unfamiliar with the concept. It would take some effort to help educate the designer on the advantages of the substitution. The concept of Structural WWR has now become more mainstream thanks to all the hard work and collaborative efforts of manufacturers, conversion engineers, structural engineers, the Wire Reinforcement Institute (WRI), distributors, and installers. Years ago, the inclusion of WWR in ACI 318 as a structural reinforcement was necessary and tremendously catapulted the industry. There is obviously still a lot of work to be done to get more of a market share of reinforcement to be designed using WWR, resulting in the saving of thousands of unnecessary hard labor man-hours.

Most design engineers we speak to are agreeable to the use of WWR as a structural reinforcement solution. In those cases where tilt-up wall panels are originally designed assuming 60 ksi reinforcement, and we propose an 80 ksi conversion, the engineers will run structural calculations to verify that the use of the higher strength reinforcement and the corresponding lower areas of steel is adequate to satisfy deflection and strength requirements. As Phil noted earlier, there is a change in panel deflection and flexural demand associated with a 60 ksi to 80 ksi conversion. As a result, a straight proportional 25% reduction of the area of steel simply cannot be taken. But a significant material weight and labor installation saving for the 80 ksi WWR solution can still be achieved and prove beneficial.

(WRI note to reader: for more information on the impact that a change in cross-sectional reinforcing steel can have on concrete slender wall design, visit the WRI website and download WRI's July 2022 Technical Blog on this important topic. For general information on reinforcement conversion, WRI's May 2022 Technical Blog provides detailed guidance.)

Can you provide a quantified example of a project's time and labor savings that were realized through the implementation of WWR as the primary solution in lieu of reinforcing bars?

The following tabulations (Figures 14 and 15) are real case scenarios comparing man-hours to tie conventional reinforcement versus the man-hours to place WWR. Man-hours will of course vary from one project to the next, but the projects presented below provide a good idea of just how beneficial the use of WWR is to the bottom line.

PROJECT[1][4]	PROJECT A	PROJECT B
MATERIAL	**Grade 60 conventional rebar**	**Grade 80 WWR**
ACTUAL MAN-HOURS	**1978**	**723**
TOTAL APPROXIMATE TONS	**182**	**95**
MAN-HOURS PER TON	**10.9 MHT**	**7.6 MHT**
PRICE PER TON[2]	**$545/ton**	**$380/ton[3]**

Footnotes
1. Project A and Project B deployed very similar tilt-wall panel geometries and structural designs, with Project A using rebar and a comparatively smaller Project B using WWR.
2. Sample cost burden per man-hour with overhead and profit = $50 per man-hour
3. Comparing similar projects that used different reinforcement solutions, on a price-per-ton basis the installed cost of WWR is approximately 30% lower than that of conventional rebar.
4. Cost information indicated is regionally specific and representative of market conditions at the time of construction, prior to publication of this 2023 WRI document. Both projects were installed by Reinforcing Concepts.

Figure 14: Comparison of two projects utilizing different reinforcement solutions, showing the significant installed cost advantage on a price-per-ton basis.

PROJECT C[1]		
REINFORCEMENT SOLUTION	WWR MATERIAL OPTION[2]	REBAR MATERIAL OPTION
MATERIAL YIELD STRENGTH	80 KSI	60 KSI
MATERIAL TONNAGE	153	239
MATERIAL $/TON	$1,750.00	$1,450.00
MATERIAL COST	$267,750.00	$346,550.00
"UNWELDED" TONNAGE	43	Not applicable
"UNWELDED" $/TON	$1,450.00	Not applicable
"UNWELDED" MATERIAL COST	$62,350.00	Not applicable
TOTAL REINFORCEMENT COST	$330,100.00	$346,550.00
MATERIAL INSTALLATION $/TON	$395.00	$550.00
MATERIAL INSTALLATION COST	$60,435.00	$131,450.00
"UNWELDED" INSTALLATION $/TON	$550.00	Not applicable
"UNWELDED" INSTALLATION COST	$23,650.00	Not applicable
TOTAL LABOR COST	$84,085.00	$131,450.00
TOTAL INSTALLED COST	**$414,185.00[3]**	**$478,000.00**

Footnotes
1. Cost information indicated is regionally specific and representative of market conditions at the time of construction, prior to publication of this 2023 WRI document. This project was installed by Reinforcing Concepts using the "WWR Material Option".
2. The "WWR Material Option" includes what is referred to as "unwelded" reinforcement, comprised of individual loose rebar required at select locations (panel trim bars, panel add bars at wall panel jambs, panel collector bars, etc.)
3. Installed cost of the WWR material option is 14% lower than that of conventional rebar, with a total savings exceeding $63,000.

Figure 15: Comparison of two options considered for implementation on a project, with the WWR option ultimately selected and providing significant cost advantage.

During the construction administration (CA) phase of the project, when site observations are carried out for the purpose of assessing the general conformance of construction with the design intent, can you describe the on-site visual documentation of WWR and how it might compare to observation of loosely-placed individual reinforcing bars?

Phil Kopf:

The construction administration phase of the scope of services tends to be much easier than observing a loosely-placed individual reinforcing bar project. One thing most will notice is how much cleaner the WWR panels look. The WWR panel is checked much faster because you only need to ensure the correct sheet style is placed in the panel. Once that is confirmed, you are confident that the valid number and diameter of reinforcement pieces are provided. With a conventional loosely-placed individual reinforcing bar project, you need to check the quantity and diameter of the bars.

One of the most important things I look for on a project site is the proper layering of the WWR sheets. Our typical reinforcement details (*Figure 13*) indicate that the long vertical bars in the tilt-up panel are in layers one and four. Layer one is the bottom-most reinforcement layer and layer 4 is the top-most reinforcement layer. Sometimes the long vertical layer one and layer four sheets are flipped during placement, and layer one is inverted to layer 2, and layer 4 is inverted to layer 3.

It is important for panels reinforced with the WWR sheets to be inspected early in the project. This early inspection affords the installers the time necessary to correct errors before too many panels are reinforced and before they are cast. Also, any loose reinforcement bars that might be required should be visually observed to ensure the proper location, spacing, and size of bars, as well as their nested positioning relative to the WWR sheet itself.

In your experience, what are the biggest barriers to entry for WWR to be the reinforcement of choice for tilt-up wall panel construction?

Travis Tracy & RCI Team:

The biggest barrier to entry that we face is the general contractor who simply doesn't want to try something different or allocate the resources necessary to check or re-check loads. They typically have a high level of comfort in grade 60 rebar, and they know what to expect. Because of this it is hard to convince them that they would save money on labor by switching to WWR. Simply put, they don't want to risk profit margins for a new and unfamiliar workflow. So, the WWR provider must be a liaison and manage comfort to mitigate these feelings and provide the correct metrics to sell the service.

For projects you design, what were the driving factors that lead to WWR being considered as a structural reinforcement solution?

Phil Kopf:

There are areas of the country where WWR is the go-to solution for tilt-up panel reinforcement. So from the start of the project, it was determined that WWR would be the first choice.

It has been my experience that once a tilt-up contractor has installed a WWR tilt-up project, they never want to go back to the conventionally loosely-place reinforced solution.

Are you seeing any upward trends in WWR usage, not only in tilt-up wall panel construction, but in other structural applications as well?

Travis Tracy & RCI Team:

Absolutely the trend is upward for WWR usage. Applications like slabs on metal deck, slabs on ground, foundations, tilt-up wall panels, and tunnel forming all have a heavy lean towards WWR usage due to the shortage of labor, cost of labor, and efficiency of labor. As we continue to create good relationships with our clients and provide good experiences with the WWR system, we are confident that client familiarity and comfort with the system will be a direct result.

For more information visit our website: WireReinforcementInstitute.org