

# Podiums

## Design Handbook





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## A Growing Solution for Mid-Rise Buildings

Podium construction is becoming the go-to model for mid-rise multifamily housing in dense urban and suburban markets because of its enhanced durability, fire ratings, and sound insulation compared to an all-wood structure.

Podiums are structural components used in multi-story construction to create a strong, fire-resistant base for upper-level framing systems. Key components, including hollowcore plank, beams, columns, and wall panels, are manufactured off-site and integrated to support efficient podium construction. Podiums serve as the transition between lower-level parking or commercial spaces and upper-level residential or mixed-use structures. This design model helps maximize residential unit density while minimizing construction cost and complexity and complying with building height restrictions.

By stacking occupancies, podium construction maximizes usable square footage, supports higher unit density on constrained sites, and helps projects stay within building height and code limitations. At the same time, it improves long-term building performance, offering greater durability, improved moisture resistance, and reduced maintenance compared to traditional approaches.

This guide highlights the advantages of precast concrete podiums and outlines structural and architectural considerations for designing mid-rise podium buildings.





## What is a Podium Structure?

In construction, podium construction describes a building approach in which the lower levels — typically one or two floors — are made from noncombustible, high-performance materials (like concrete, steel, or masonry). Above the podium, lighter construction such as wood framing can maximize height allowances under building codes while controlling costs.

Under the International Building Code (IBC), these podium buildings leverage horizontal building separation (IBC § 510.2) to treat the lower podium and upper portion as virtually independent structures for determining height, area, and fire restrictions.

The podium level often contains parking, retail space, or shared amenities like fitness centers and lobbies. Podium buildings may also include a courtyard built above the podium level with patio, pool, and garden features.

Podiums are popular in urban areas because they maximize land utilization. In colder climates, the podium level also offers a valuable amenity — covered, and sometimes heated, parking, providing protection from snow and ice, and improved security compared to surface lots.

A concrete podium provides a durable, fire-resistant base for upper-level wood framing, helping multifamily projects maximize density while supporting efficient construction schedules.



## Benefits of Precast Podiums

One of the most common building materials for podium structures is hollowcore plank. This versatile flooring and roof system provides many advantages during design, construction, and occupancy.

### Sound & Acoustics

Concrete absorbs and dampens sound more effectively than wood construction. A well-designed concrete podium provides robust separation between parking noise, vehicular traffic, and residential units above — helping deliver more comfortable acoustics for residents.

### Longer Spans with Fewer Columns

Because of its high strength and prestressed design, hollowcore allows for long clear spans with fewer columns than would be required with other construction methods. Prestressed hollowcore planks can be manufactured up to 45-feet long, giving designers maximum flexibility in parking layouts and amenity spaces.

### Speed of Installation

The use of hollowcore in podium construction can lead to a shorter construction schedule. The precast elements can be produced concurrently with sitework, and once delivered, they can be installed in a matter of days and with less labor than other materials. Additionally, off-site production of construction materials in a controlled environment improves schedule predictability over cast-in-place construction.

After installation, the podium slab provides a working deck for HVAC, plumbing, and electrical trades, eliminating the need to wait for on-site concrete curing.

### Reduced On-site Labor

Precast structures can be erected with much smaller crews than cast-in-place structures.

### Reduced Site Congestion

Precast podium components are delivered ready-to-install and with proper coordination, just-in-time delivery can minimize the amount of days that they spend sitting on the job site. They require much less staging area than tilt-up, which leads to cleaner, safer job sites.

### Higher Quality Construction Materials

As compared to cast-in-place concrete, the factory-controlled production environment of precast concrete yields greater precision, fewer field errors, and easier coordination for embed locations, penetrations, and openings.

### Fire Ratings

The inherent fire resistance of concrete provides a multi-hour fire separation between the parking and living space, which helps meet building code requirements and protects occupants in the event of a fire. Hollowcore podium construction eliminates the added fireproofing steps required with other building systems.





# Structural & Architectural Considerations

Podiums create open space for parking, retail, or amenity space on the lower floor or floors.

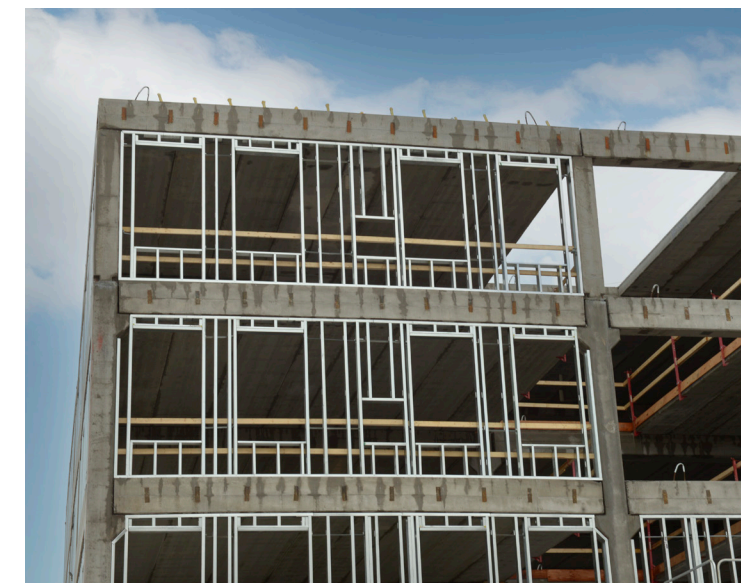
Typical podium arrangements include:

- **5-over-1:** Five stories over one concrete podium (the most common configuration)
- **5-over-2:** Five stories over a two-story podium
- **4-over-1 or 3-over-1:** Variations that suit smaller sites or different market demands construction schedules.

From a structural perspective, precast concrete podiums are manufactured to support substantial vertical and lateral loads from multiple stories above while maintaining open, functional layouts below. Hollowcore plank enables long, clear spans with fewer columns, allowing for efficient parking layouts, flexible retail spaces, and adaptable amenity areas. Precast beams and columns work together to transfer loads efficiently, while wall panels can provide additional structural support and enclosure where required.

Design teams must also consider factors such as column spacing, load paths, and integration with upper-level framing to optimize both performance and constructability. The use of coordinated precast components helps simplify these considerations by aligning structural and architectural requirements early in the design process.

Architecturally, podium construction offers flexibility in layout and design while meeting critical building code requirements, including IBC § 510.2 horizontal separation. The precision of off-site manufactured components supports accurate alignment, coordinated openings, and consistent quality, helping streamline construction while meeting a wide range of design objectives.



## Typical Applications

The podium design is a popular choice for mid-rise multifamily housing applications. It can also be used for mixed-use commercial buildings in dense urban areas, with retail on the podium level instead of parking or tenant amenity spaces.

Precast concrete podiums provide a durable, fire-resistant, and sound-insulated structural base that supports a range of building types. By separating lower-level parking or commercial space from upper-level residential or mixed-use construction, podium construction maximizes land use while maintaining structural efficiency and long-term performance. This approach is well-suited for projects requiring higher density, integrated parking, or flexible occupancy within limited site footprints. Off-site-manufactured components, including hollowcore plank, beams, columns, and wall panels, improve coordination and help ensure predictable construction timelines. The result is a versatile building solution that accommodates a variety of architectural layouts while meeting critical code requirements and performance demands.

### Podium applications

- Multifamily residential buildings
- Mixed-use developments
- Parking structures with upper-level framing
- Commercial spaces requiring fire-rated structural bases



A completed podium construction project showcases how a precast concrete podium supports upper-level residential floors, delivering durability, fire resistance, and efficient use of space in mid-rise multifamily developments.



# Design Loads & Fire Requirements

Hollowcore can be manufactured to meet AASHTO's HS-20 loading specifications.

We work with the engineer of record to meet the specified design loads for the podium structure. If the design loads exceed hollowcore's maximum load capacity, we can substitute solid slabs that are cast to match the width and thickness of the specified hollowcore. For extreme loading, transfer beams can be designed to meet larger loading requirements.

Podium buildings typically require either a 2-hour or a 3-hour fire separation between the podium level and the superstructure. Hollowcore can achieve 2-hour fire ratings on its own, and 3-hour fire ratings when topped with a 5/8th-inch gypsum board.

In podium applications, hollowcore components are used to support high live loads associated with parking decks, mixed-use occupancies, and transfer conditions between structural systems. Their inherent mass and prestressed composition also enhance fire resistance, helping maintain structural stability during extended fire exposure. These assemblies support IBC 510.2 requirements by providing the necessary fire separation and structural performance, ensuring code compliance while accommodating the distinct demands of both the lower noncombustible levels and the upper framed structure.



Hollowcore is available with **2- or 3-hour fire ratings**, providing code-compliant protection for a wide range of building types. Fire ratings are project-specific and based on overall design requirements.

**2-hour fire ratings** meet the needs of most commercial and multi-family projects with efficient, standard hollowcore designs.

**3-hour fire ratings** provide extended protection for more demanding applications through increased slab depth or enhanced engineering.

Hollowcore's non-combustible concrete composition helps maintain structural integrity, limit heat transfer, and contain fire.



## Interface Between Podium & Superstructure

Precast podium systems can be made to accommodate any type of superstructure. For example, Inverted Tee (IT) Beams can be cast with steel plates to land steel columns. For masonry walls, we can provide grout pockets or form savers. Our team will work with the engineer of record to meet the requirements for the interface between the podium and superstructure.

The interface between the podium and superstructure is a critical design consideration that directly impacts structural performance and constructability. Connection detailing must address vertical and lateral load transfer, including shear forces, uplift conditions, and diaphragm interaction, ensuring that loads are efficiently distributed between structural systems. It must also account for differential movement among materials, such as precast concrete, structural steel, and wood framing, as well as long-term effects such as creep, shrinkage, and thermal expansion.

By incorporating connection features during fabrication, precast components help reduce field adjustments and improve installation efficiency while maintaining consistent quality. Pre-engineered embeds, bearing plates, and blockouts can be accurately placed to align with superstructure requirements, minimizing site modifications and coordination challenges. This level of prefabrication supports more predictable construction sequencing and reduces the risk of installation conflicts.

Early coordination with the engineer of record, architect, and contractor allows key interface elements—such as elevations, tolerances, and load paths—to be resolved prior to delivery. The result is a streamlined transition between the podium and superstructure that enhances structural reliability, supports schedule performance,



A crane installs precast podium components to form a structural deck, illustrating how off-site manufacturing elements enable efficient placement and accelerated construction progress.

and ensures the system performs as intended throughout the building's life.

Precast installation plays a critical role in maintaining schedule momentum on podium construction projects. As components are lifted into place, crews can quickly establish the structural deck needed to support ongoing work. This efficient erection process reduces downtime between trades, improves jobsite coordination, and helps keep complex multifamily and mixed-use developments on schedule.



# Typical Framing Schemes

Precast podiums feature a simple framing scheme using precast concrete gravity columns and precast concrete IT Beams, Rectangular Beams, or L Beams, depending on the application. County Prestress & Precast's Precast Columns are typically manufactured in 16"x16" or 24"x24" sizes with corbels to support the precast beams.

Two-story podiums that include parking on the ground level and the first above-ground level can be built with precast concrete double-tees supporting the elevated parking level and hollowcore forming the base of the podium, on which the superstructure will rest.



# Handling Lateral Stability & Diaphragm Action

Hollowcore can be installed in a manner that allows it to function as a diaphragm. County Prestress & Precast supplies the tie-ins to connect the discrete planks to each other to achieve diaphragm action. This design effectively transfers lateral loads to the shear walls. Depending on the application, hollowcore most often achieves diaphragm action without a structural topping.

Proper connection detailing and plank alignment help ensure reliable load paths, while contributing to overall building stiffness and stability under wind and seismic forces typical in multi-story podium construction.



# Podium Elements



County Prestress & Precast manufactures, delivers, and installs precast podium components designed to integrate seamlessly with a variety of exterior walls. On the job site, our installation services include grouting of cores and keyways and installation of dowels.

Our precast concrete podium elements include beams, columns, wall panels, and spandrels, all designed to work together as a coordinated structural solution. This integrated approach improves load transfer, simplifies installation, and enhances overall constructability, allowing for efficient project execution and consistent performance across varying building configurations.

## Precast Columns



Columns are manufactured to specification. Typical precast podium columns measure 16"x16", and can be one or two stories tall. If required, columns can be designed with prestressed tendons or mild steel reinforcement.

## L Beams



Our L Beams are designed for perimeter applications and are manufactured to specification, up to a maximum height of 48 inches.

## IT (Inverted Tee) Beams



County Prestress & Precast offers multiple shapes for casting Inverted Tee (IT) Beams to meet local market standards. Our IT Beams can also accommodate different ledge heights between the left and right side.

## Hollowcore Slabs



Hollowcore slabs are extruded at 4' wide and can be made to span up to 45'. Typical podium designs feature a maximum length of 28'. Hollowcore can be manufactured in 8", 10", 12", and 16" depths to meet specified load capacity.

## Rectangular Beams



Our rectangular beams are manufactured to specification. We can accommodate Castaly Hangers and Dapped bearings.

## Solid Slabs

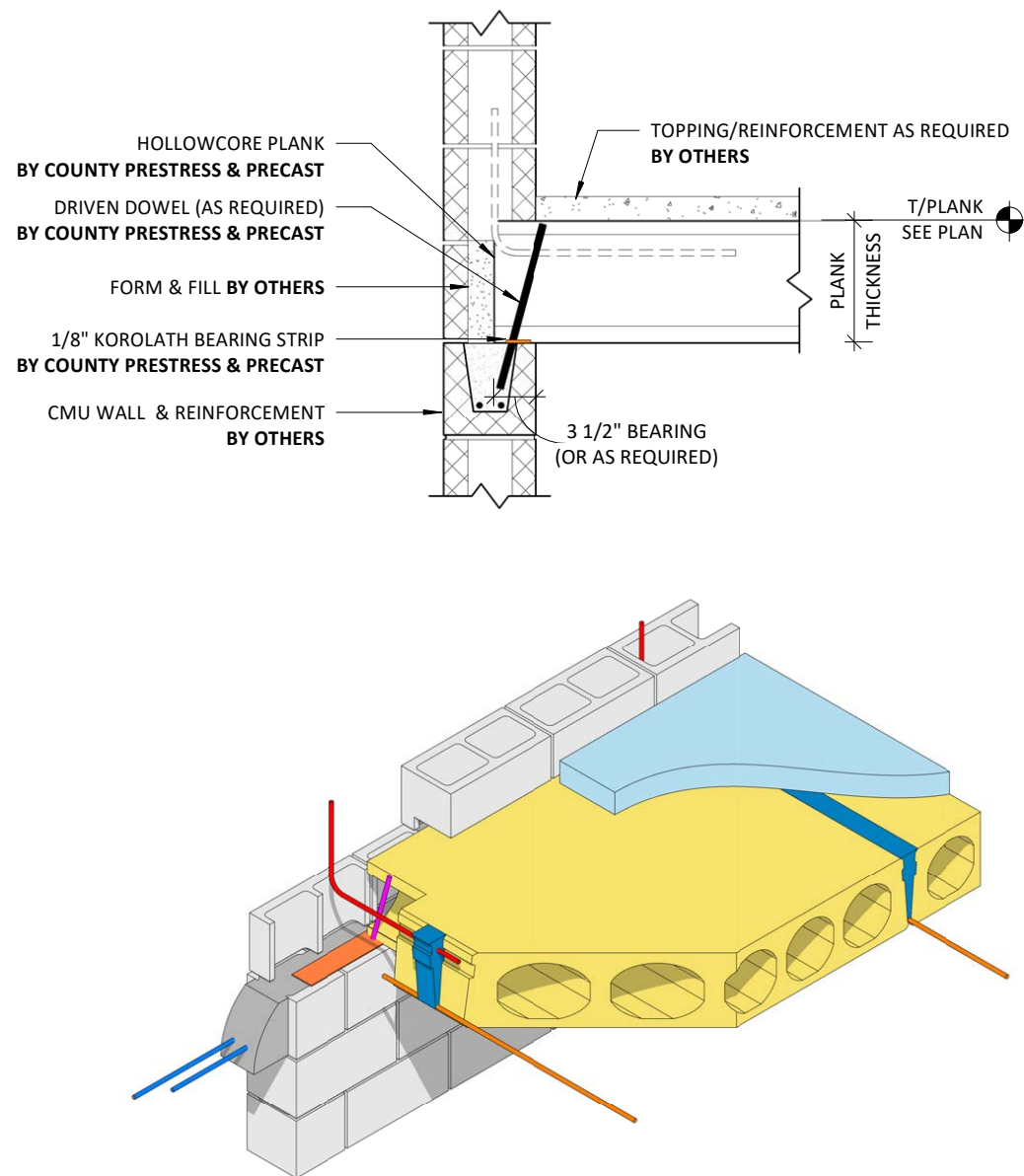


Solid slabs deliver higher load capacities than hollowcore slabs of the same depth. Solid slabs can be manufactured to dimensions matching specified hollowcore dimensions or up to 24" deep to meet higher load capacities.

# Typical Podium Details

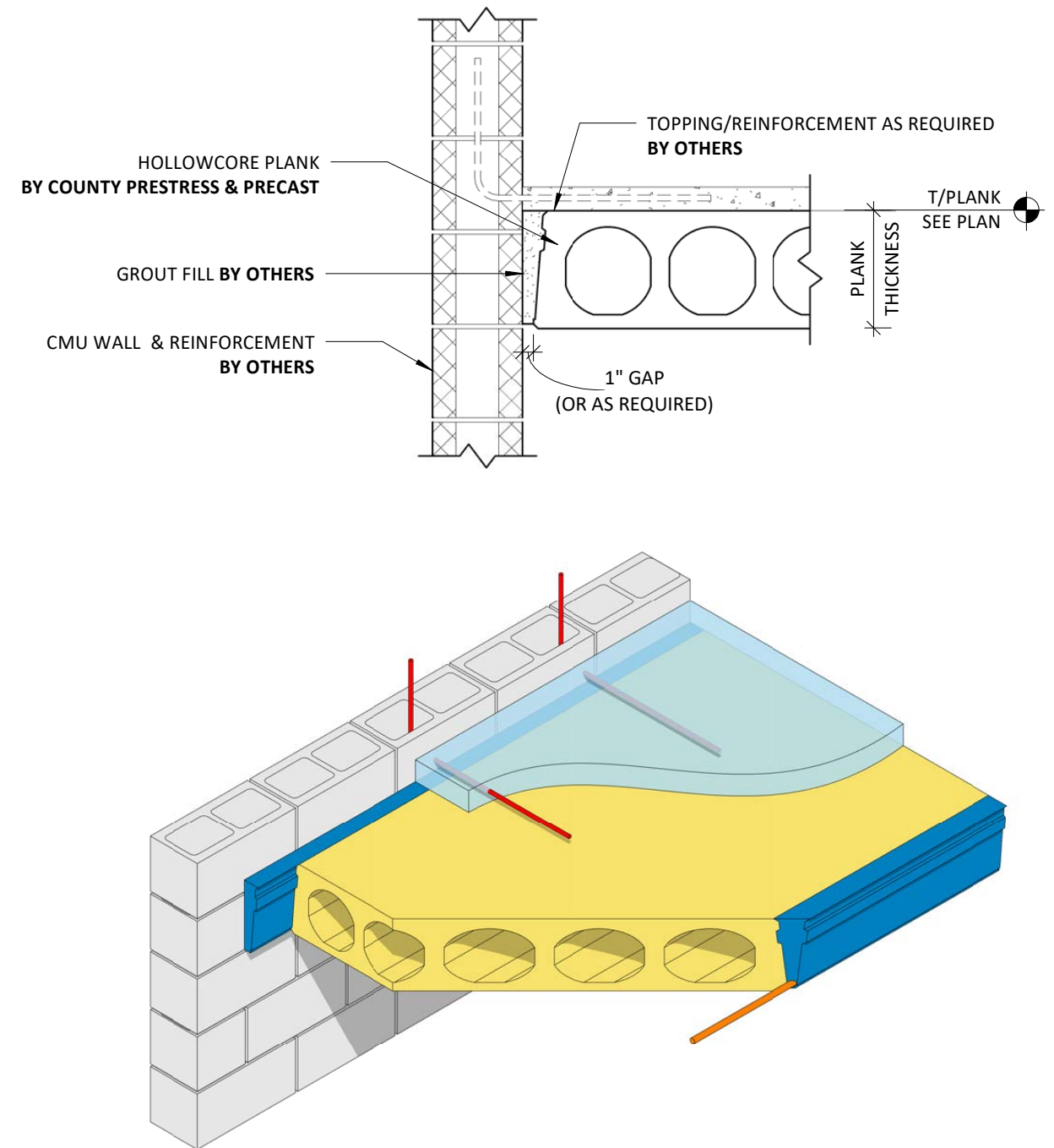
Hollowcore Bearing at CMU Wall.....	D3	Precast Beam Bearing at Precast Column .....	D11
Hollowcore Lap at CMU Wall.....	D4	Precast Column Base Connection.....	D12
Hollowcore Lap at CMU Wall.....	D5	Precast Column Corbel .....	D13
Hollowcore Bearing at Precast Panel.....	D6	Precast Beam Bearing To Column .....	D14
Hollowcore Lap at Precast Wall.....	D7	Hollowcore Lap at Cast-In-Place Wall.....	D15
Hollowcore Lap at Cast-In-Place Wall.....	D8	Hollowcore Bearing at Cast-In-Place Wall .....	D16
Hollowcore Bearing at Precast Beam.....	D9	Hollowcore Lap at Cast-In-Place Wall.....	D17
Hollowcore Bearing at Steel Beam .....	D10		

## D3 Hollowcore Bearing at CMU Wall



# Typical Podium Details

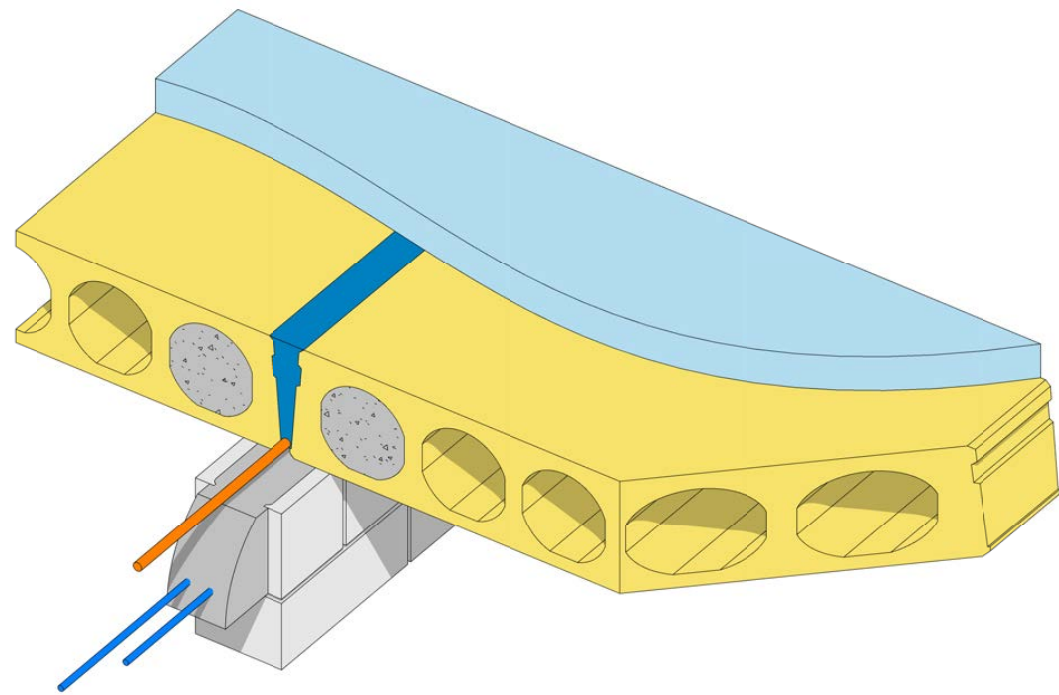
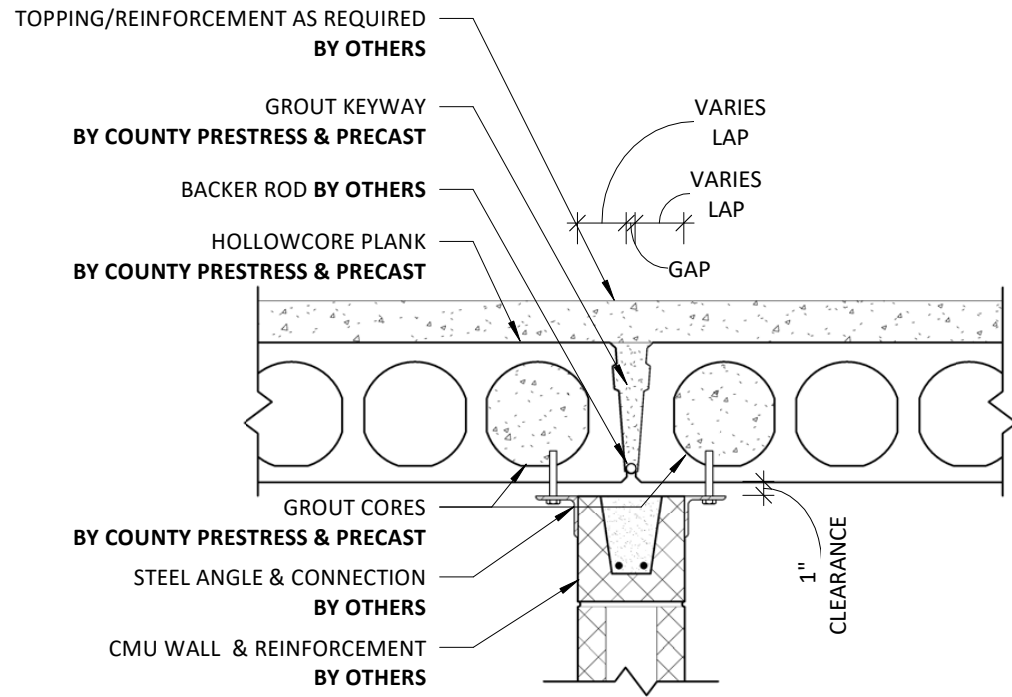
## D4 Hollowcore Lap at CMU Wall



# Typical Podium Details

D5

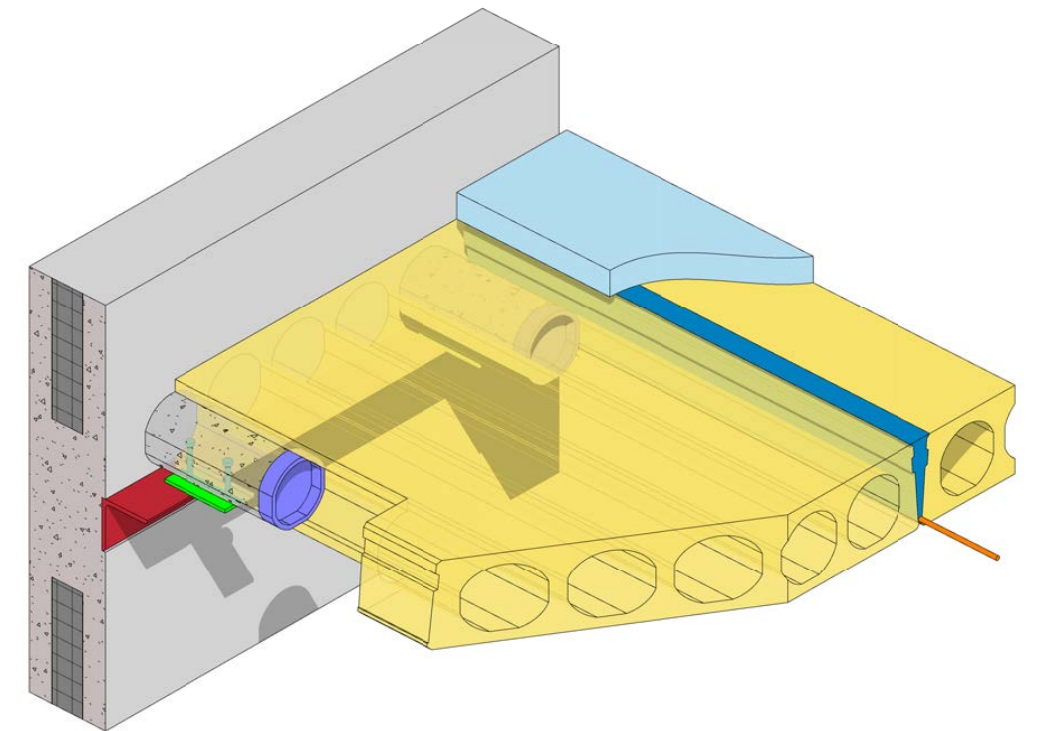
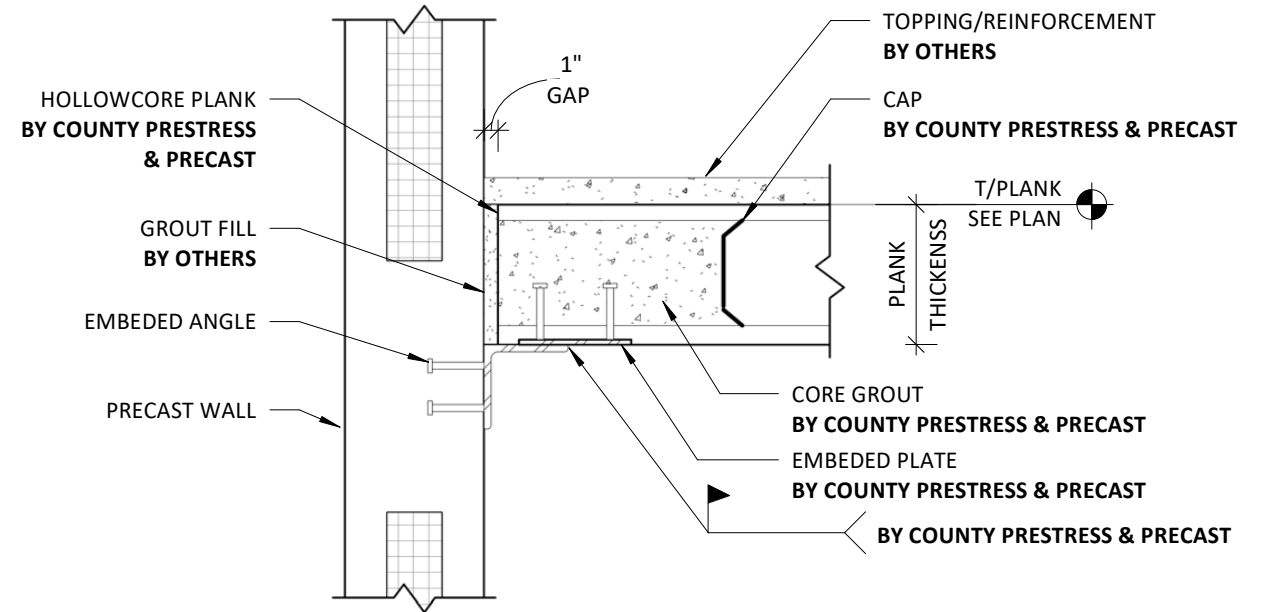
## Hollowcore Lap at CMU Wall



# Typical Podium Details

D6

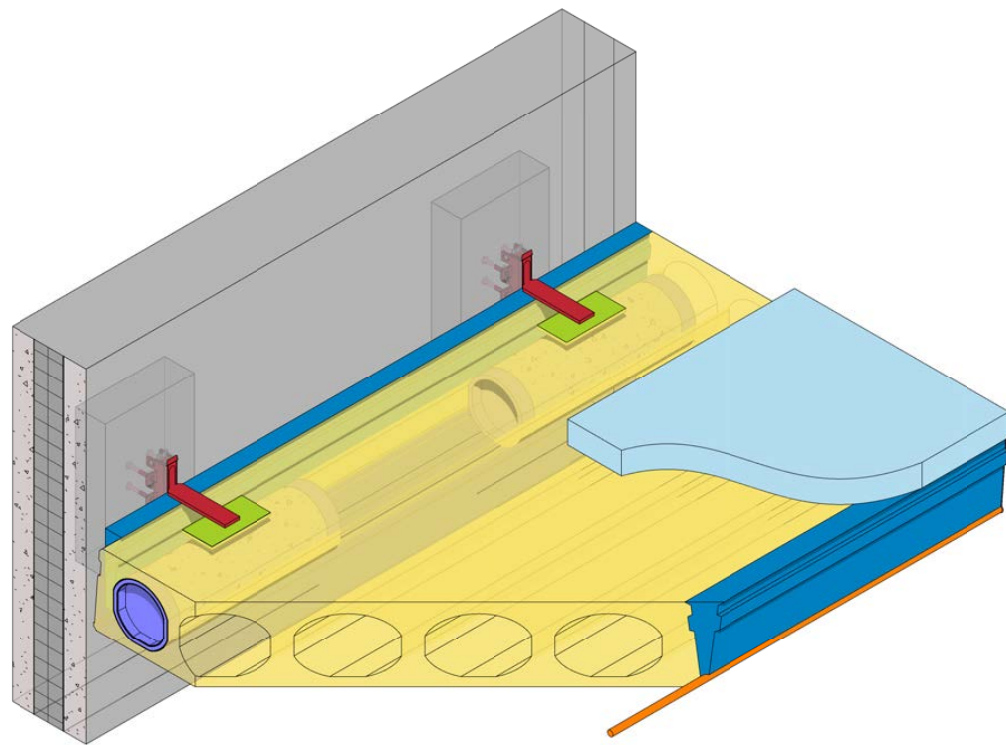
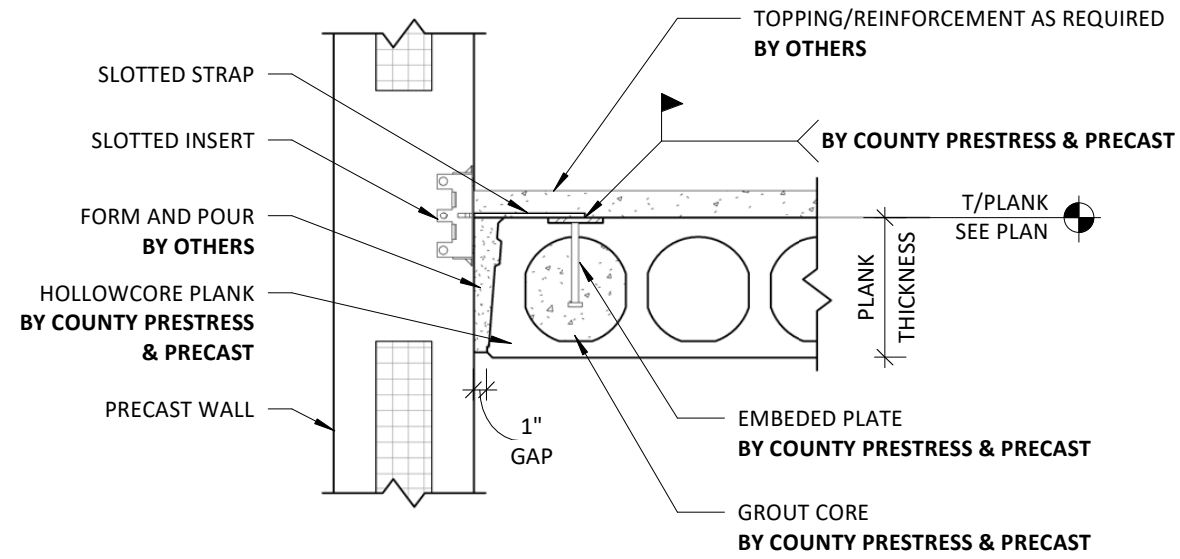
## Hollowcore Bearing at Precast Panel



# Typical Podium Details

D7

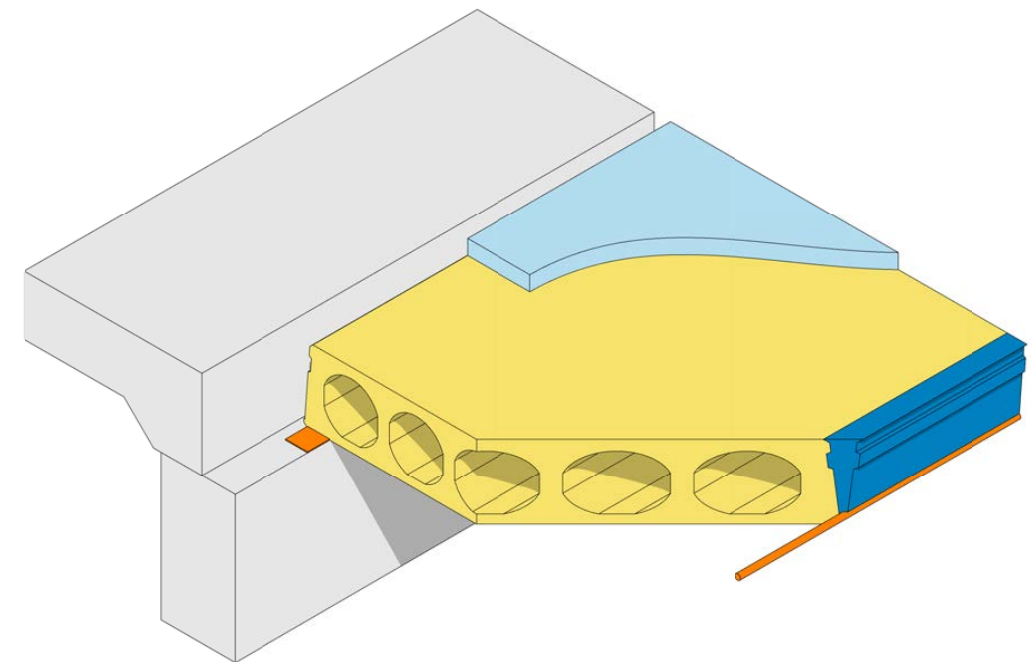
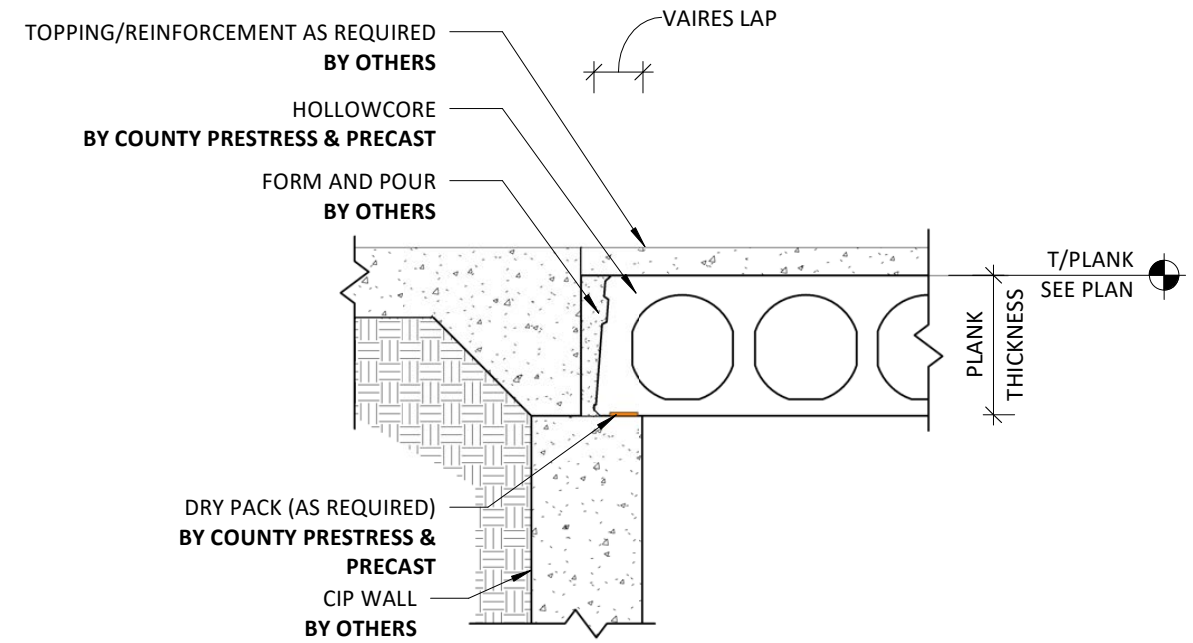
## Hollowcore Lap at Precast Wall



# Typical Podium Details

D8

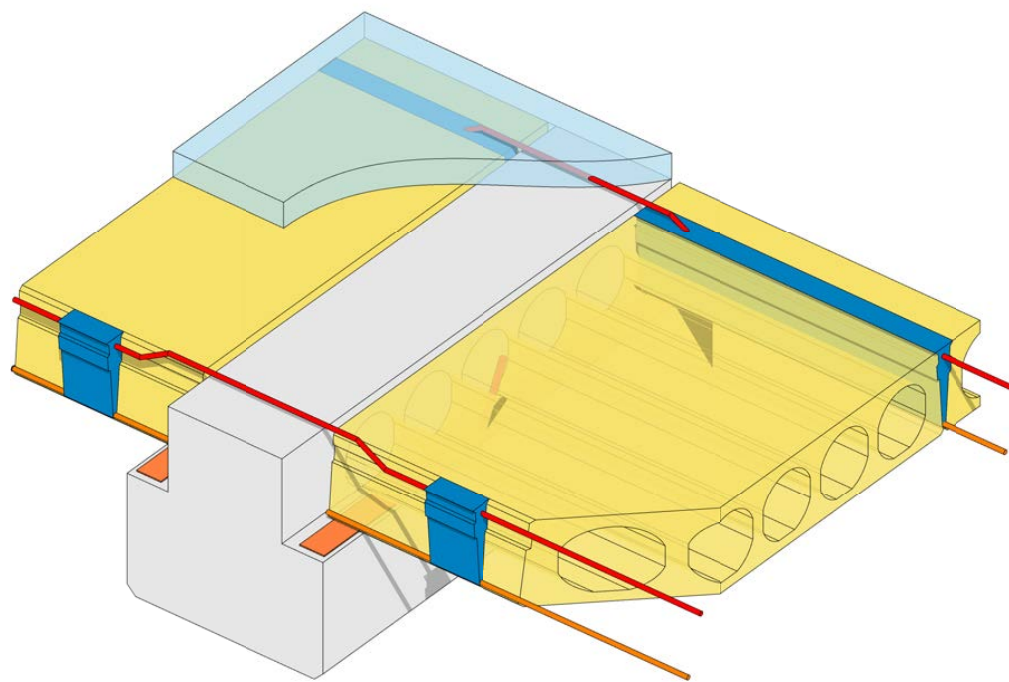
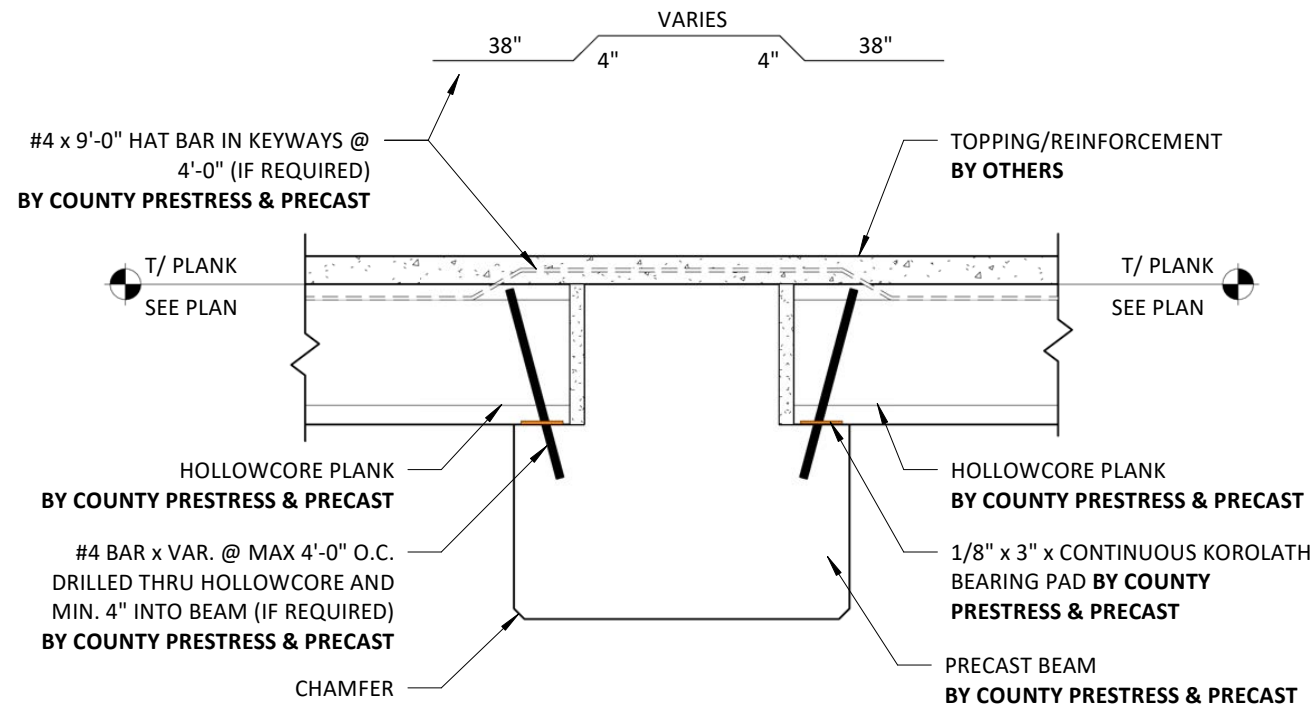
## Hollowcore Lap at Cast-In-Place Wall



# Typical Podium Details

D9

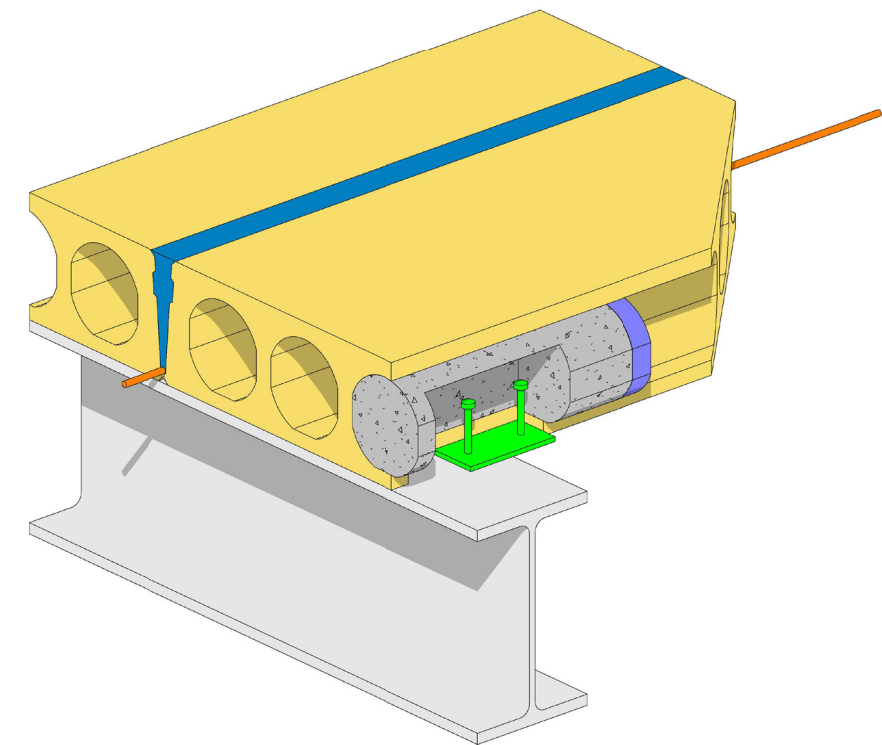
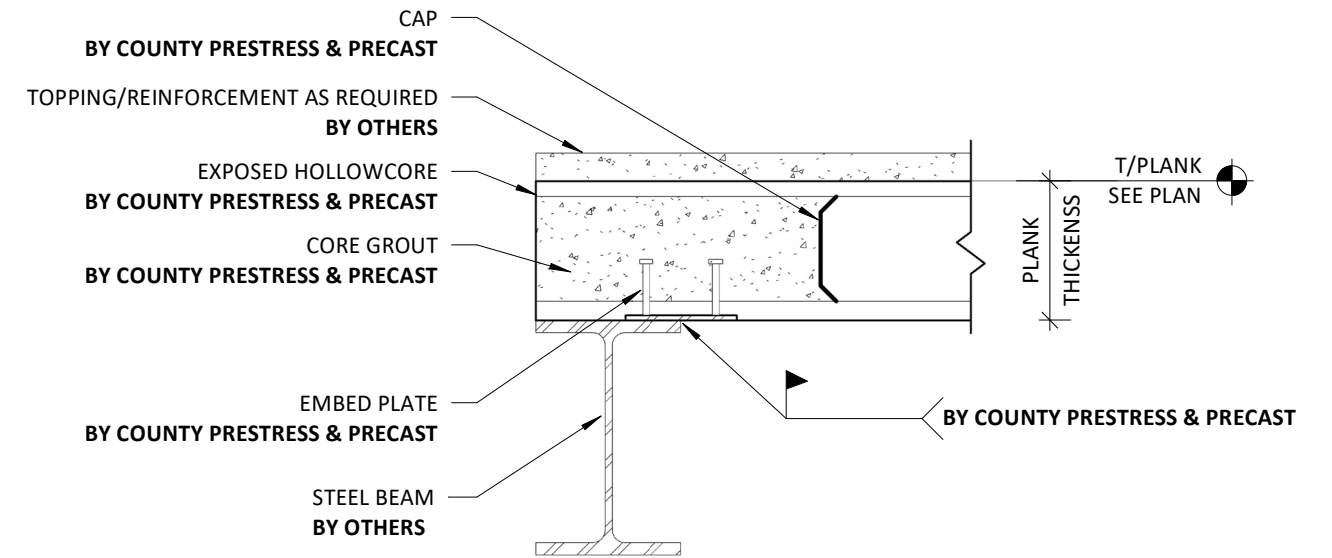
## Hollowcore Bearing at Precast Beam



# Typical Podium Details

D10

## Hollowcore Bearing at Steel Beam

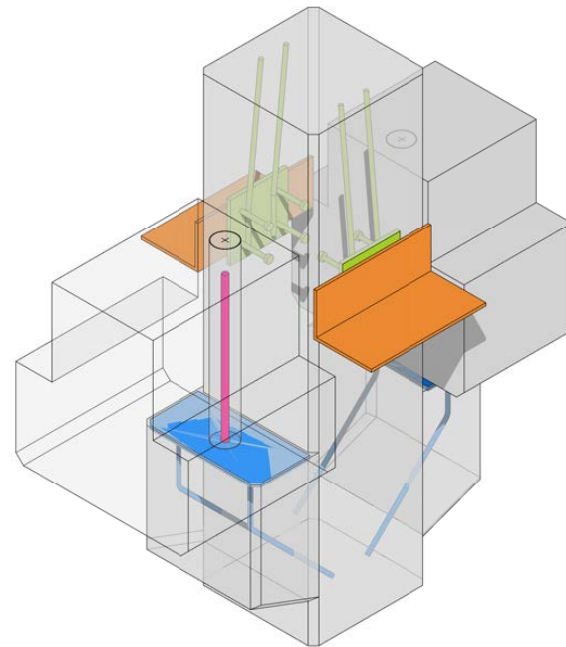
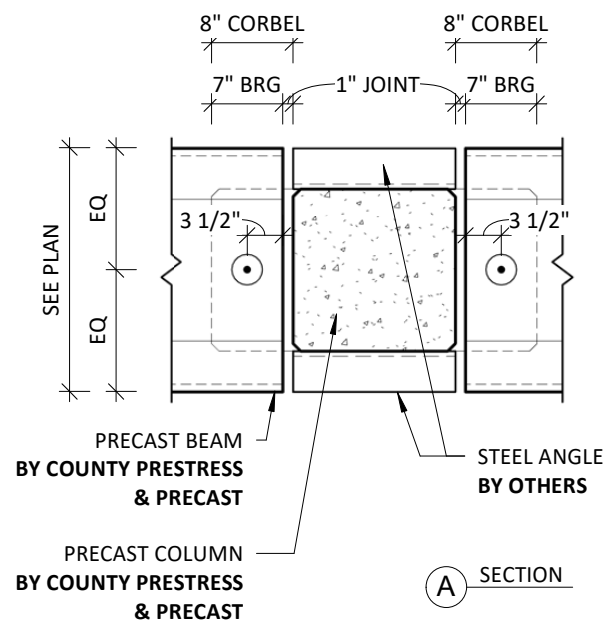
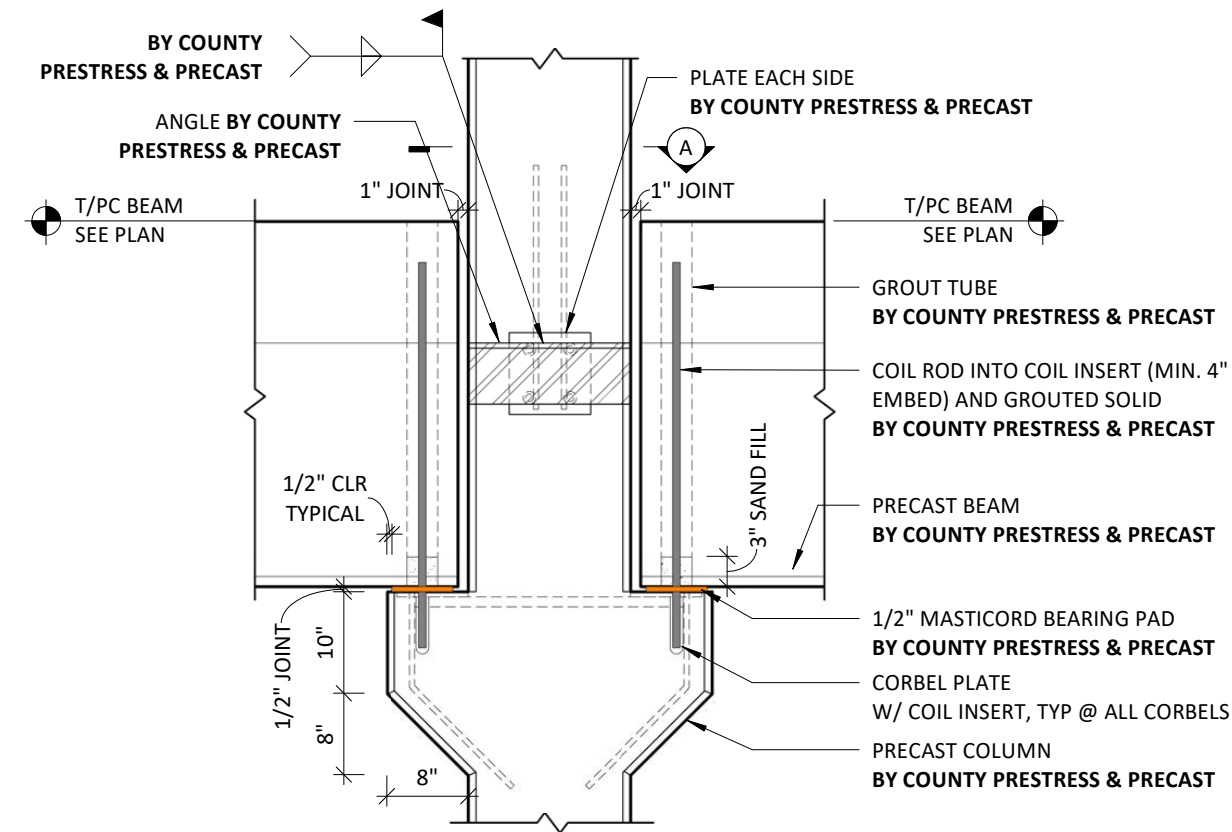




# Typical Podium Details

D13

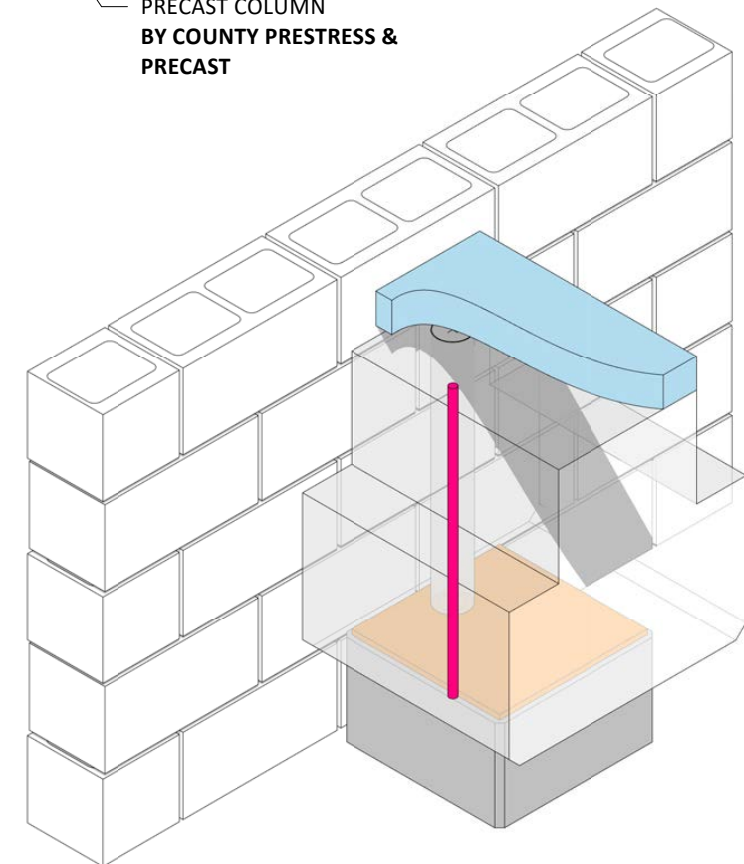
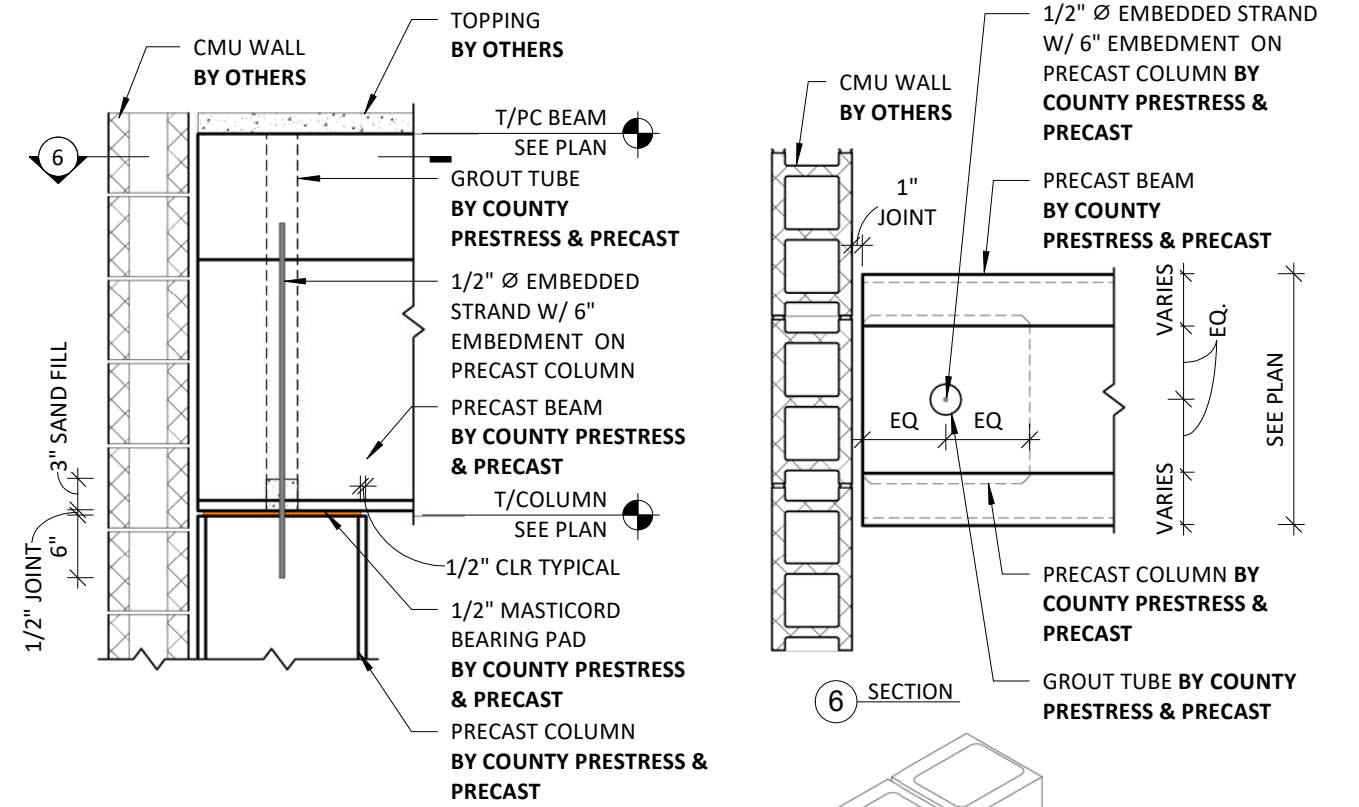
## Precast Column Corbel



# Typical Podium Details

D14

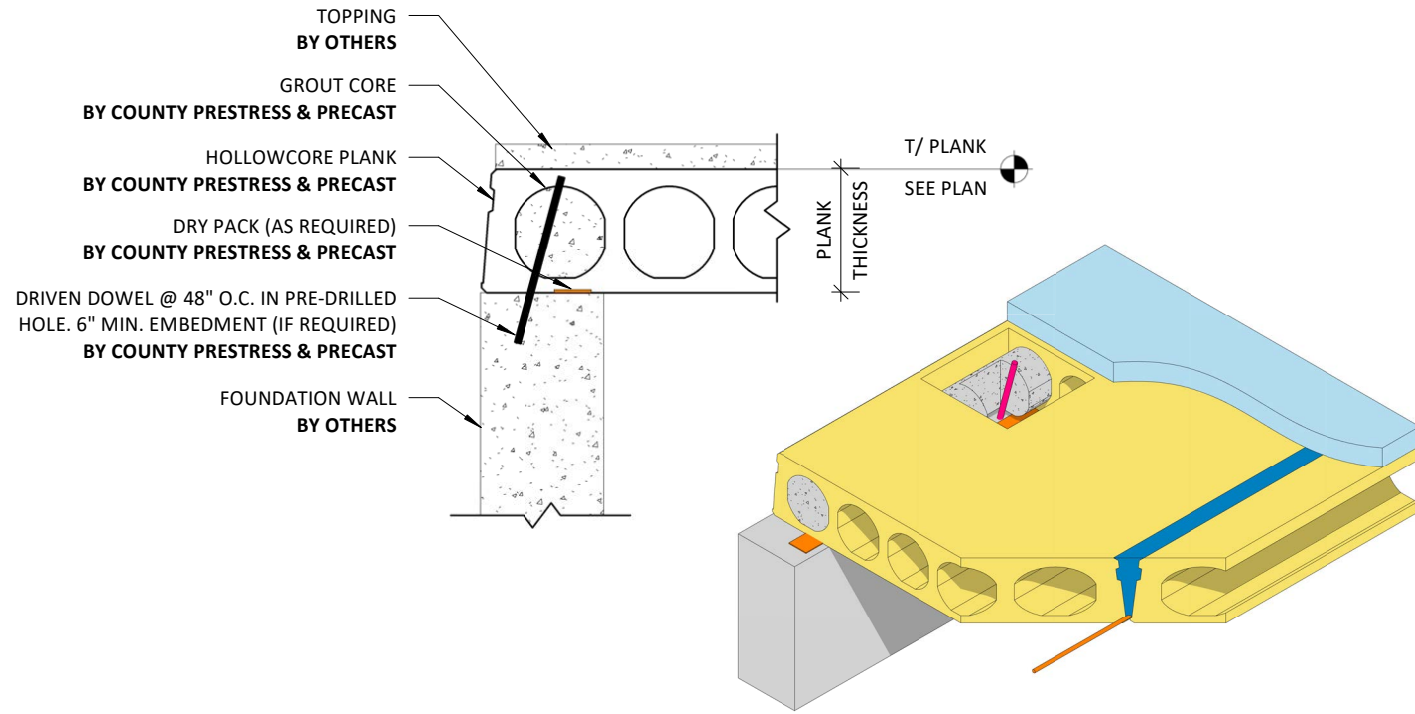
## Precast Beam Bearing To Column



# Typical Podium Details

D15

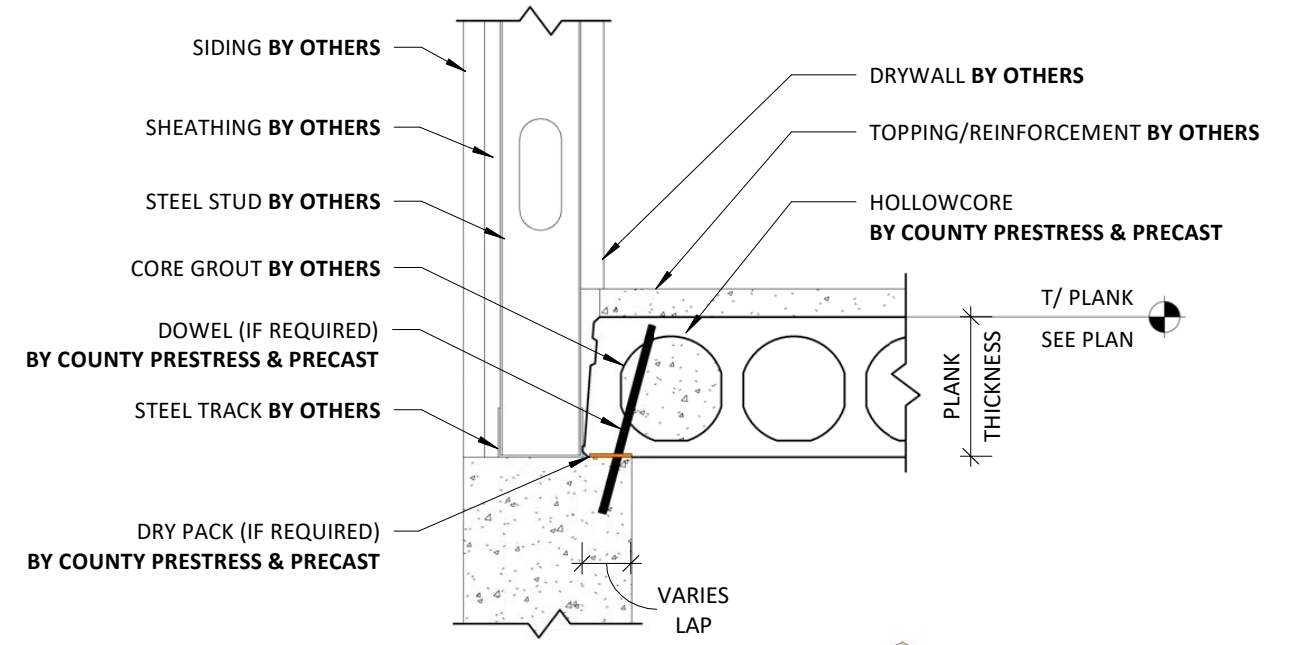
## Hollowcore Lap at Cast-In-Place Wall



# Typical Podium Details

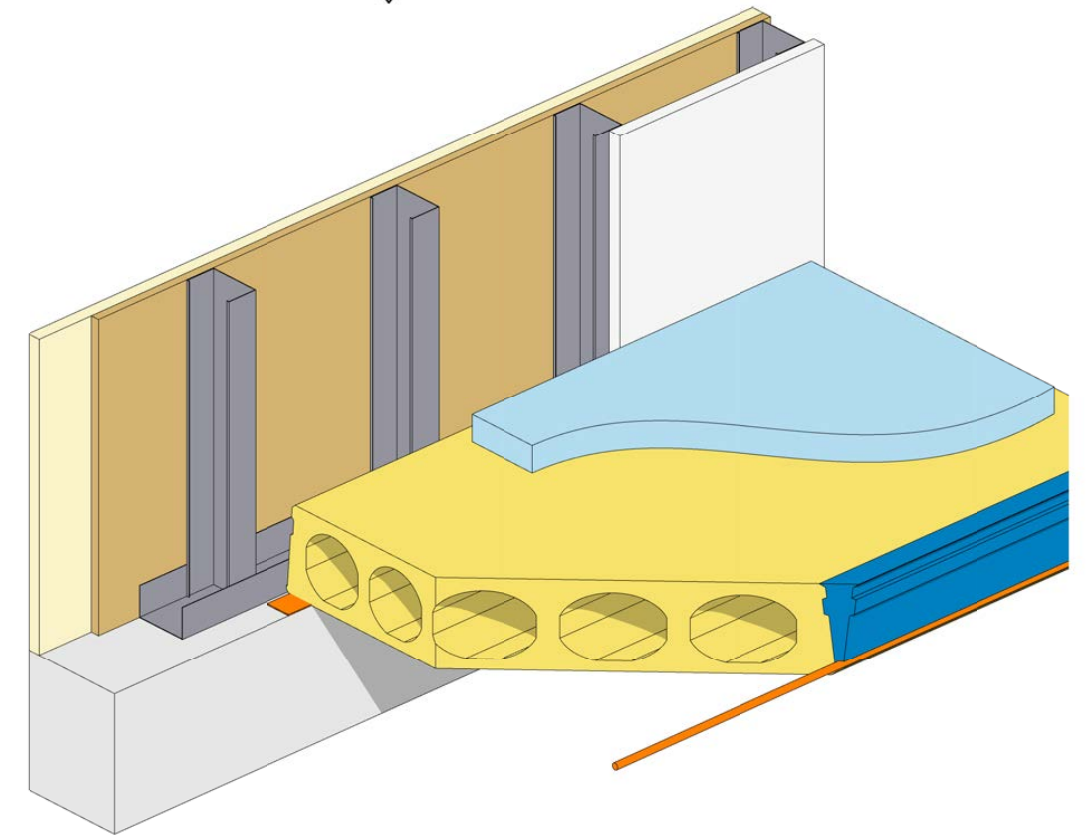
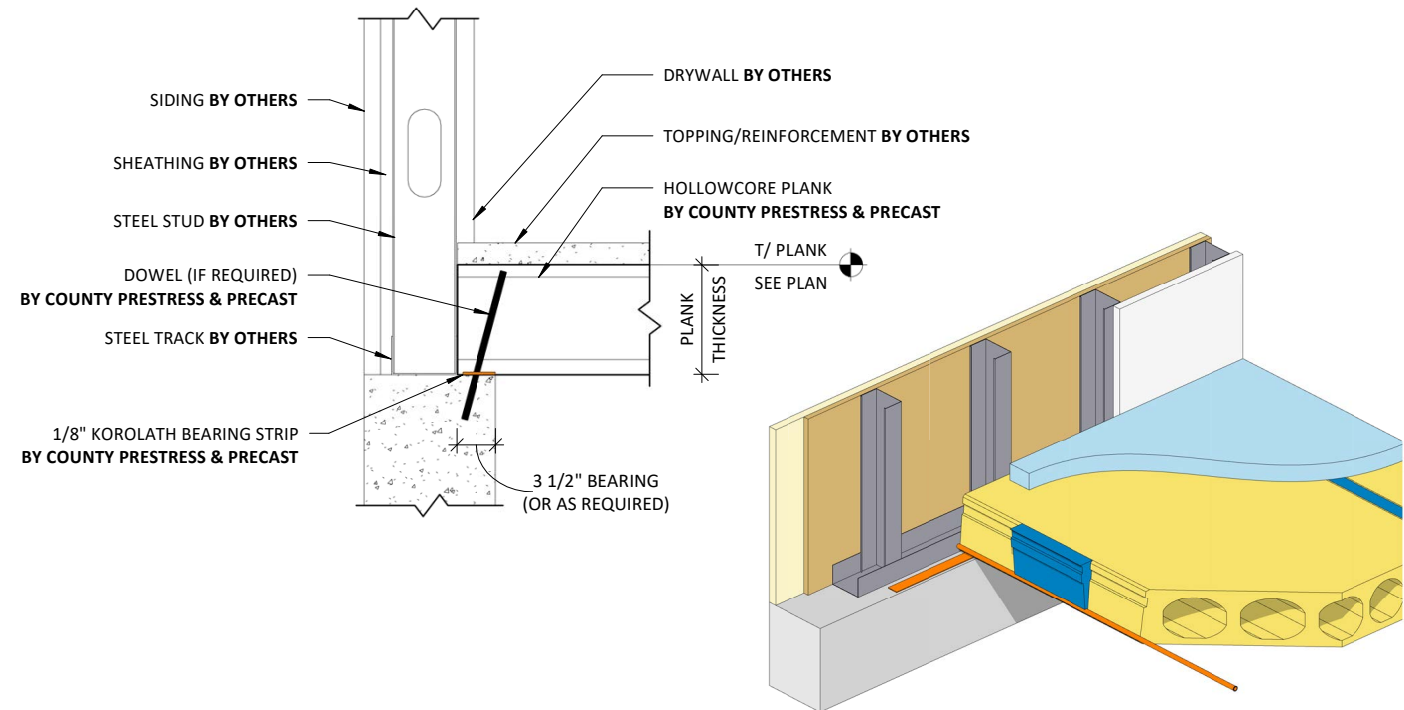
D17

## Hollowcore Lap at Cast-In-Place Wall



D16

## Hollowcore Bearing at Cast-In-Place Wall



# Pre-Construction & Design Services

## In-house Modeling and Engineering Capabilities

County Prestress & Precast offers in-house modeling and engineering services that facilitate value engineering, helping project teams move smoothly from concept to completion. Our in-house drafting and BIM modeling experts work closely with architects, engineers, developers, and contractors to create efficient, buildable precast podium solutions. With value-added services like early clash detection, MEP coordination, cost estimating, and logistics planning, we help optimize structural layouts, accelerate schedules, and ensure projects are delivered with efficiency and confidence. Our team is also available to offer timely assistance with field issues that may require design alterations in order to minimize construction delays.



## Manufacturing & Quality Control Process

Precast concrete podium components use specialized high-strength concrete mixes that offer unmatched resistance to cracking, wear, and freeze-thaw damage. Tight dimensional tolerances simplify fit-up in the field.

County Prestress & Precast performs extensive quality testing to verify material performance. All of our production facilities are PCI-certified, and we conduct a wide range of physical property tests, such as compressive strength, air content, and slump, to monitor consistency and optimize mix design.

These tests are supported by on-site sampling and real-time adjustments to address job-specific variables, minimizing delays and ensuring consistent product delivery.



## Production Capacities

We produce high-quality precast concrete elements year-round. We can rapidly scale up production to meet short lead times.

With more than 80 years of concrete manufacturing experience, the County Prestress & Precast team understands the needs of construction professionals. We are committed to providing the highest quality concrete products and services to meet even the most challenging construction schedules.

# Expert Support Every Step of the Way



## Shipping & Delivery

County Prestress & Precast is your full-service partner for precast concrete podium products. We provide support through every phase of a project, including shipping and delivery coordination. Our experienced dispatch and delivery crews work with contractors to meet construction deadlines and minimize downtime and risk.

## Erection Planning & Field-Grouting

As a full-service partner, County Prestress & Precast handles coordination of erection and field-grouting for podium products. We subcontract exclusively with PCI-certified field erectors and provide on-site supervision during erection when needed. Our trusted erection partners include union and non-union crews.



# Project Highlights

County Prestress & Precast has supplied concrete podium components for numerous projects, varying in both size and complexity. Our website offers case studies that demonstrate our capabilities and commitment to supporting our clients' success.



## Alcott Apartments

The Alcott Apartments in Minnetonka, Minnesota, showcase how precast podium construction supports efficient, high-performance multifamily development. Hollowcore and insulated wall panels were used to form the podium of this 350-unit building, providing a durable, fire-rated base above structured parking. Precast components were selected for their strength, design flexibility, and ability to meet an accelerated schedule on a constrained site. Hollowcore installation created an immediate working deck, improving coordination and jobsite efficiency. In addition to structural performance, the system enhances acoustics and supports energy-efficiency goals, contributing to a well-coordinated, reliable podium solution.

## New Richmond Mixed Use

The New Richmond Library and Archway Residences project highlights the versatility and performance of precast podium construction in a mixed-use environment. This development combines a 30,000-square-foot public library with 69 high-end residential units above, supported by a fully integrated precast podium. Hollowcore plank, beams, columns, and insulated wall panels were used to create a durable structural foundation over parking and public space. Precast components were selected for their structural integrity, safety, and installation efficiency, helping reduce the construction schedule by up to two months. The result is a high-performing, space-efficient podium that supports both community use and residential living.

## Shakopee Apartments

The Shakopee Apartments project demonstrates how precast podium construction delivers efficient, high-performing results in mixed-use developments. County Prestress & Precast supplied hollowcore and solid slabs for the podium of this five-story building, creating open, column-free spaces that maximize usable area while accommodating tight site conditions. Hollowcore provided an immediate working deck, allowing follow-on trades to begin sooner and helping maintain the construction schedule. In addition to construction efficiency, the system enhances acoustic separation and fire performance, improving tenant comfort and safety. This project highlights the value of hollowcore in delivering flexible design, durability, and reliable construction outcomes.



**Proud to be American based  
and American made**